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# RBN100N125S1HGWS-80#FF0

Renesas RB Series Power Device

IGBT

Product series

|   |                 |
|---|-----------------|
| N | N-ch IGBT       |
| H | N-ch IGBT w/FRD |

VCES

|     |       |
|-----|-------|
| 65  | 650V  |
| 125 | 1250V |
| 180 | 1800V |

Product series (Identified by Tsc)

|   |          |
|---|----------|
| T | None     |
| D | Tsc>3us  |
| M | Tsc>5us  |
| S | Tsc>10us |

Ic,nom[A]

\*1

\*1

\*1 Internal code

Quality grade

Lead-free code

|    |                 |
|----|-----------------|
| F0 | None (Bare-die) |
| B0 | Lead-free, Sn   |

Packing

|   |            |
|---|------------|
| F | Wafer case |
| C | Magazine   |

Specification (Bare-die Product)

|   |              |
|---|--------------|
| H | High power   |
| M | Middle power |
| L | Low power    |
| Q | High speed   |

Package code

|    |               |
|----|---------------|
| WA | Un-sawn Wafer |
| WS | Sawn Wafer    |
| PQ | TO-247        |
| P4 | TO-247Plus    |
| PK | TO-3P         |
| PM | TO-3PFM       |

Internal code (Package Product)

## Renesas RBN Series IGBTs

# RBC40E125B1FPQ-80#FF0

\*1 Internal code

Renesas RB  
Series Power Device

Diode

Ic,nom  
[A]

Product series

|   |                 |
|---|-----------------|
| A | Single (N base) |
| E | 2Lead (N base)  |

VCES

|     |       |
|-----|-------|
| 65  | 650V  |
| 125 | 1250V |
| 180 | 1800V |

Technology

Quality grade

\*1

Lead-free code

|    |                 |
|----|-----------------|
| F0 | None (Bare-die) |
| B0 | Lead-free, Sn   |

Packing

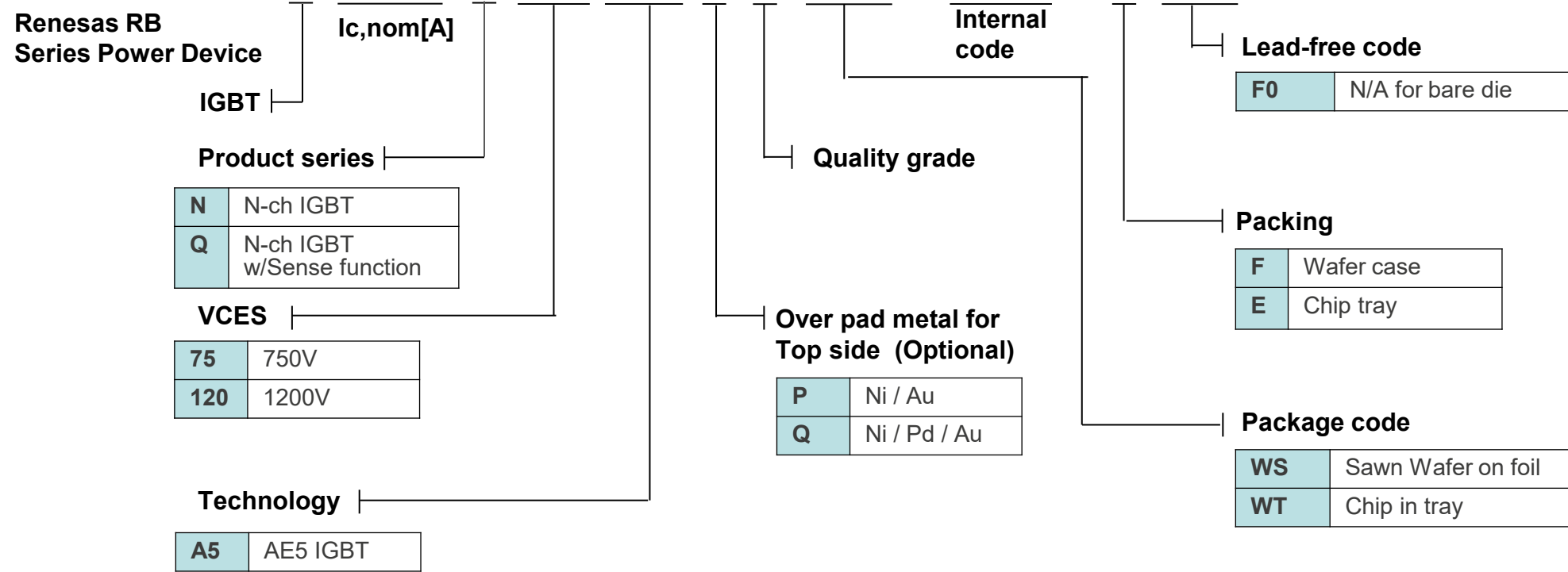
|   |            |
|---|------------|
| F | Wafer case |
| C | Magazine   |

Package code

|    |               |
|----|---------------|
| WA | Un-sawn Wafer |
| WS | Sawn Wafer    |
| PQ | TO-247        |
| P4 | TO-247Plus    |
| PK | TO-3P         |
| PM | TO-3PFM       |

## Renesas RBC Series FRDs

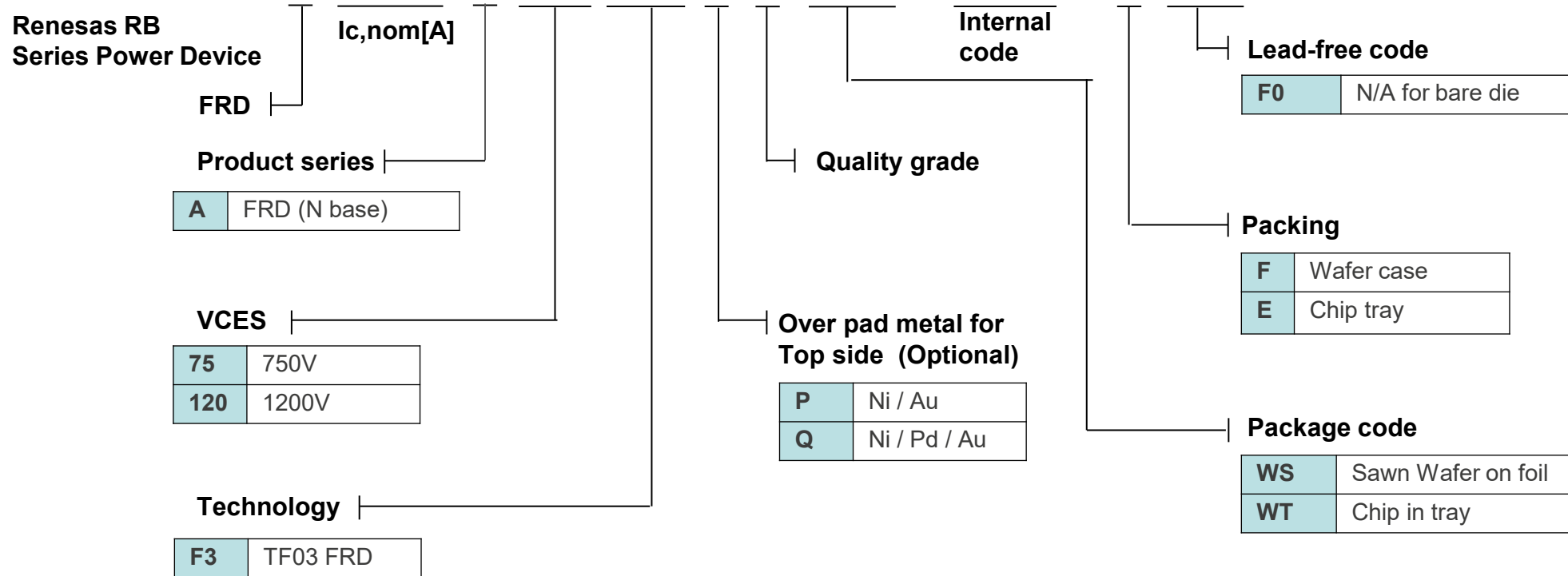
# RBN300N75A5PJWS-000#FF0



## Automotive IGBT bare die for standard product

Note:  
Codes shown in gray color are optional.

# RBC300A75F3PJWS-000#FF0



## Automotive FRD bare die for standard product

Note:  
Codes shown in gray color are optional.

# RBA 250 N 04 A H PF-4 U A 01 # G B 0

Renesas MOSFET for Automotive

$I_{D(DC)}$

|     |      |
|-----|------|
| 160 | 160A |
| 250 | 250A |

Polarity

|   |           |
|---|-----------|
| N | N-Channel |
| P | P-Channel |

$V_{DSS}$

|    |      |
|----|------|
| 04 | 40V  |
| 10 | 100V |

Process

|   |      |    |          |
|---|------|----|----------|
| A | ANL3 | Y* | REXFET-1 |
| C | ANM2 |    |          |
| D | ANL4 |    |          |
| E | ANM3 |    |          |

Quality grade

\* Under Developing

RDS(on) range

|    |                |
|----|----------------|
| 01 | 0.5 to 1.5mohm |
| 02 | 1.5 to 2.5mohm |


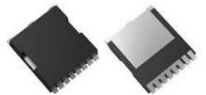
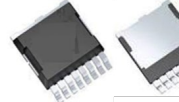
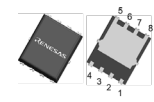
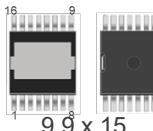
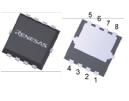
Option

|   |          |
|---|----------|
| A | Standard |
|---|----------|

Gate drive type

|   |                 |   |             |
|---|-----------------|---|-------------|
| U | Non-Logic drive | D | Logic drive |
|---|-----------------|---|-------------|

Package code

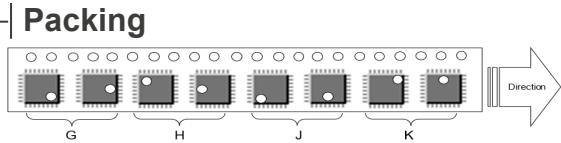
|                 |  |                        |  |
|-----------------|--|------------------------|--|
| PF-4<br>TO263-7 | <br>10 x 11.85  | NS-3<br>TOLL           | <br>9.8 x 11.6  |
| PF-5 *<br>TOLG  | <br>9.8 x 11.7 | NS-4 *<br>SO8-FL       | <br>5.15 x 6.1 |
| PF-6 *<br>TOLT  | <br>9.9 x 15  | NS-5 *<br>$\mu$ SO8-FL | <br>3.3 x 3.5 |

\* Under Developing

Optional special specifications

Lead-free code

|   |                |
|---|----------------|
| B | Lead-free (Sn) |
|---|----------------|



## Automotive MOSFETs for standard product

# RJ K 02 22 D NS - 00 - #Q 5

Renesas RJ Series Power Device

Product series

|          |   |
|----------|---|
| <b>E</b> | MOS Pch w/ function                     |
| <b>F</b> | MOS Nch w/ function                     |
| <b>H</b> | IGBT + Diode                            |
| <b>J</b> | Power MOS Pch                           |
| <b>K</b> | Power MOS Nch                           |
| <b>L</b> | Power MOS Nch Built-in High Speed Diode |
| <b>M</b> | Power MOS Pch & Nch                     |
| <b>P</b> | IGBT                                    |
| <b>Q</b> | Multi-Chip device                       |
| <b>S</b> | SiC-SBD*1                               |
| <b>U</b> | Diode(FRD, etc)                         |

\*1 SiC: Silicon Carbide  
SBD:Schottky Barrier Diode

Serial number

Package code  
(See next page)

Quality grade

Voltage class(V)

|           |         |           |           |
|-----------|---------|-----------|-----------|
| <b>01</b> | 10-19   |           |           |
| <b>02</b> | 20-29   | <b>30</b> | 300-309   |
| <b>03</b> | 30-39   | <b>40</b> | 400-409   |
| <b>04</b> | 40-49   | <b>43</b> | 430-439   |
| <b>06</b> | 60-69   | <b>45</b> | 450-459   |
| <b>08</b> | 80-89   | <b>50</b> | 500-509   |
| <b>10</b> | 100-109 | <b>60</b> | 600-609   |
| <b>12</b> | 120-129 | <b>65</b> | 650-659   |
| <b>15</b> | 150-159 | <b>1B</b> | 1100-1199 |
| <b>20</b> | 200-209 | <b>1C</b> | 1200-1299 |
| <b>25</b> | 250-259 | <b>1D</b> | 1300-1399 |

Lead-free code

|          |                        |        |
|----------|------------------------|--------|
| <b>0</b> | Lead-free              | w/o Bi |
| <b>1</b> |                        | w/ Bi  |
| <b>2</b> | Lead-free*1            | w/o Bi |
| <b>3</b> |                        | w/ Bi  |
| <b>5</b> | Halogen-free Lead-free | w/o Bi |
| <b>6</b> |                        | w/ Bi  |

\*1: High-melting-point solder excepted in RoHS is contained internally.

Packing

|          |                             |
|----------|-----------------------------|
| <b>0</b> | Bulk(Plastic bag)           |
| <b>1</b> | Bulk(Tray)                  |
| <b>H</b> | Emboss taping (Left)        |
| <b>J</b> | Emboss taping (Left) Large  |
| <b>Q</b> | Emboss taping (Right) Large |
| <b>T</b> | Tube                        |
| <b>W</b> | Wafer                       |
| <b>X</b> | Chip                        |

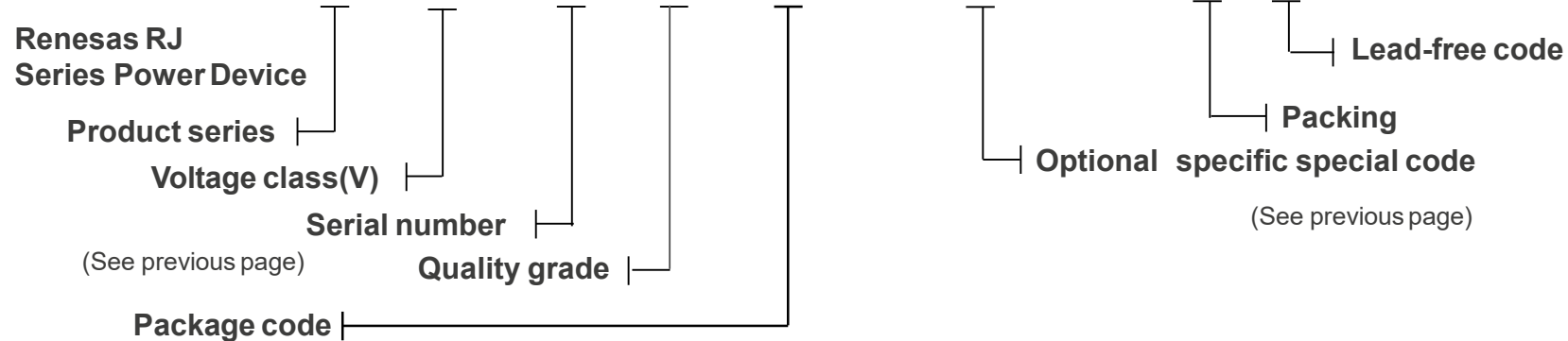
Optional index by product series






















## Renesas RJ Series Power Devices

Ex: RJK0222DNS is N channel MOS FET in HWSO3046-8 package.

Note:  
Codes shown in gray color are optional.

# RJ K 02 22 D NS - 00 - #Q 5



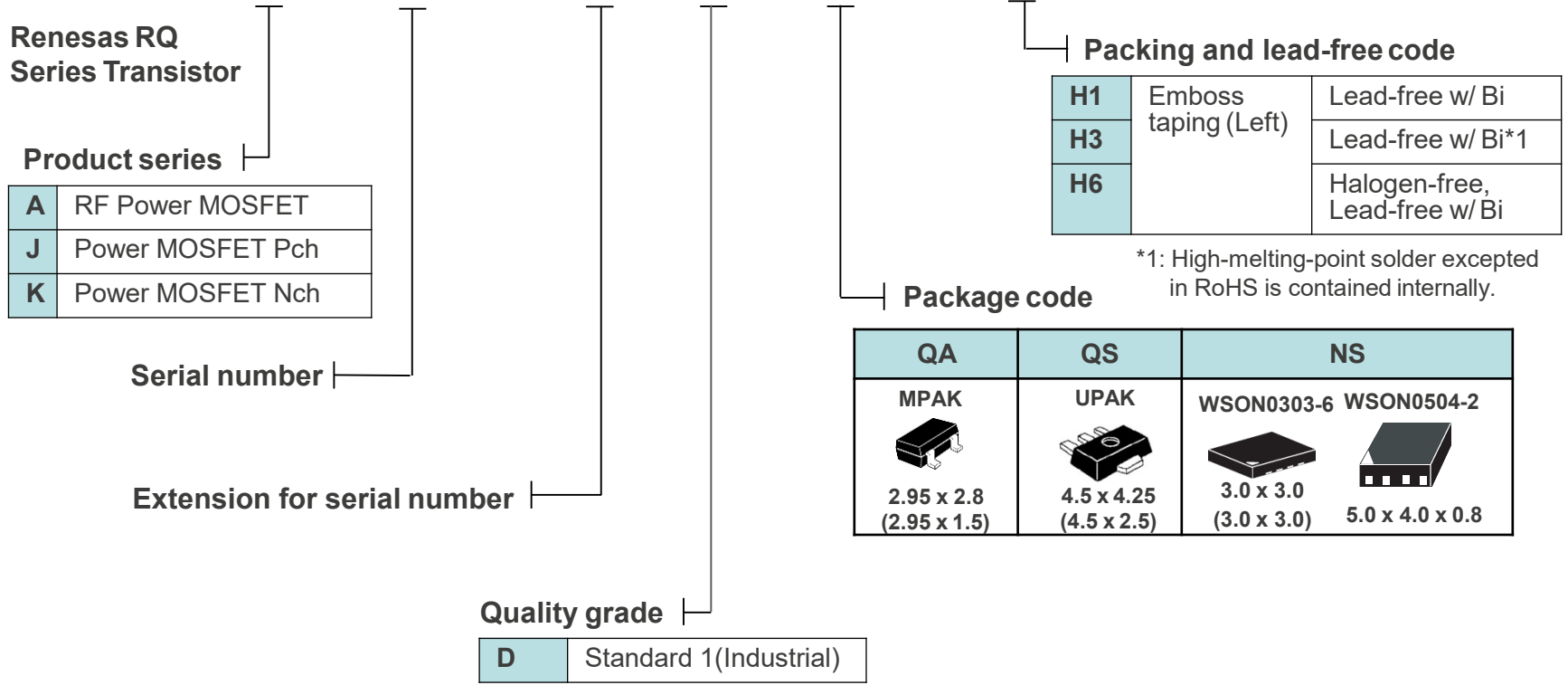
| GE  | JE  | PA   | PB  | PD   | PE  |
|---|---|--|---|--|---|
| TSOJ-8<br><br>2.95 x 2.3<br>(2.95 x 2.65)  | TO-92MOD<br><br>4.8 x 18.1<br>(4.8 x 8.0)  | WPAK, WPAK(3)<br><br>5.1 x 6.1<br>(4.9 x 5.9)       | LPAK<br><br>4.9 x 6.1<br>(4.9 x 3.95)              | DPAK(S)    MP-3A<br> <br>6.5 x 9.5    6.6 x 10.4<br>(6.5 x 7)    (6.6 x 6.1) | LDPAK(S)    LDPAK(S)-(1)<br> <br>6.5 x 9.5    10.2 x 13.0<br>(6.5 x 7)    (10.2 x 10) |
| PJ  | PK  | PM   | PN  | PP   | PQ  |
| LDPAK(L)<br><br>10.2 x 21.0<br>(12.2 x 10) | TO-3P    TO-3PSG<br> <br>(6.5 x 9.5)    (15.6 x 18.7) | TO-3PFM, TO-3PFM-5<br><br>15.9 x 40.9 (15.9 x 19.9) | TO-220AB, TO-220AB-2L<br><br>11.5 x 29 (11.5 x 15) | TO-220FP, TO-220FP-2L<br>TO-220FL<br><br>10.16 x 28.85 (10.16 x 15.87)  | TO-247, TO-247A<br><br>15.94 x 41.32 (15.94 x 21.13)   |
| QA  | QS  | SC   | SP  | NS   |   |
| MPAK<br><br>2.95 x 2.8<br>(2.95 x 1.5)   | UPAK<br><br>4.5 x 4.25<br>(4.5 x 2.5)  | HSOP-20<br><br>15.9 x 14.0<br>(14.1 x 11.0)       | FP-8DA<br><br>4.9 x 6.1<br>(4.9 x 3.95)          | HVSON3333<br>WSON0303-6  3.3 x 3.3<br>3.0 x 3.0   | WSON0504-2<br>HWSN3046-8  5.0 x 4.0<br>4.8 x 3.2   |

Ex: RJK0222DNS is N channel MOS FET in HWSN3046-8 package.

Note:  
Codes shown in gray color are optional.



# RQ A 0004 PX D QS #H1

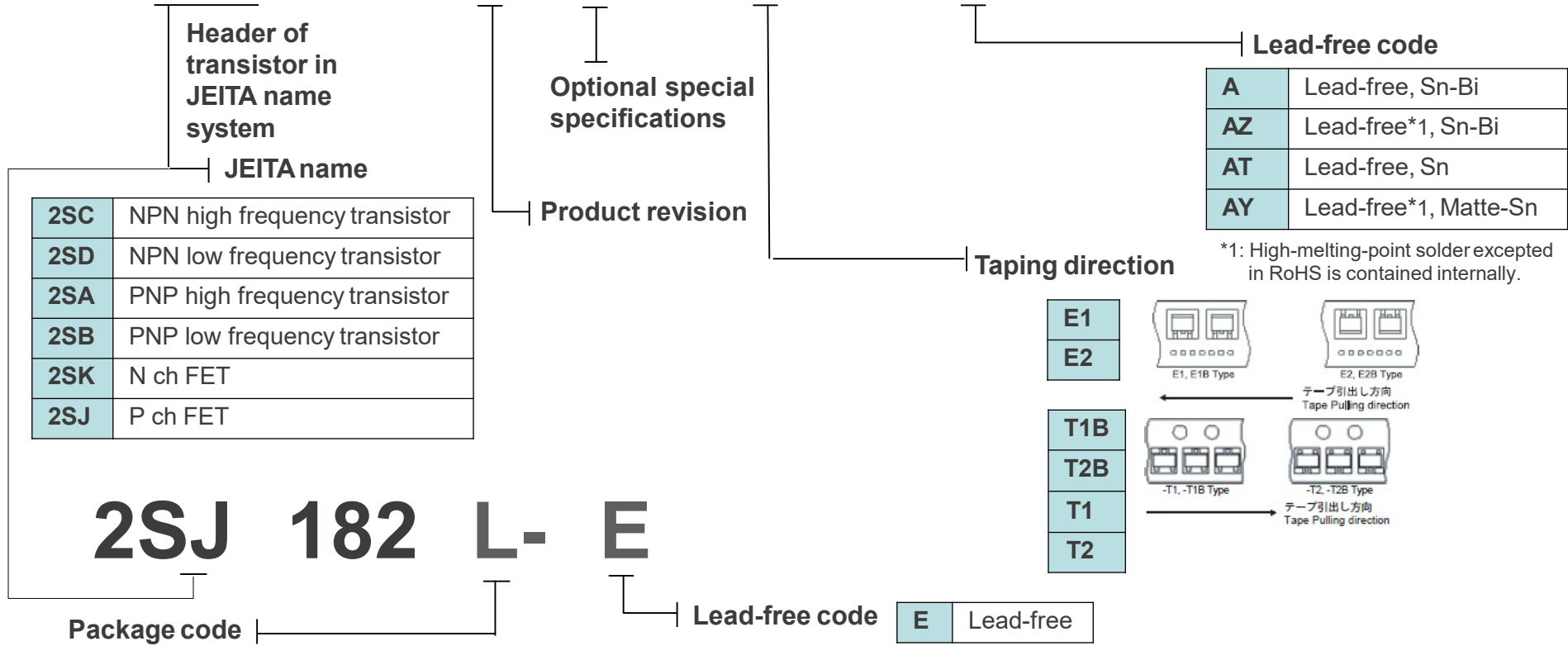


## Renesas RQ Series Transistors

Ex: RQA0004PXDQS is RF MOSFET in UPAK package.

Note:  
Codes shown in gray color are optional.

# 2SK 2158A (0) – T1B -AT Renesas Transistors in JEITA name system



2SJ 182 L- E

| L   |  | R                                       | S   |                                       | -                                      |
|---|--|---|---|---------------------------------------|--|
| DPAK(L)<br><br>10.2 x 21.0<br>(12.2 x 10) | DPAK(L)-(2)<br><br>6.5 x 23.4<br>(6.5 x 7.2) | FP-8DA<br><br>4.9 x 6.1<br>(4.9 x 3.95) | DPAK(S)-1<br><br>10.2 x 13.0<br>(10.2 x 10) | DPAK(S)<br><br>6.5 x 9.5<br>(6.5 x 7) | TO-220FM<br><br>10.5 x 31<br>(10 x 17) |

Note:  
Codes shown in gray color are optional.

Ex: 2SK2158 is High speed switching N channel MOSFET in SC-59 package.

# N 04 00 P (X) - ZK- E1 - AY

**Renesas N Series Transistor**

**Voltage Code(V)**

|    |         |
|----|---------|
| 01 | 10-19   |
| 02 | 20-29   |
| 03 | 30-39   |
| 04 | 40-49   |
| 05 | 50-59   |
| 06 | 60-69   |
| 08 | 80-89   |
| 25 | 250-259 |

**Optional special specifications**

**Polarity, Device**

|   |         |
|---|---------|
| R | PNP-Tr  |
| S | NPN-Tr  |
| P | Pch-FET |
| N | Nch-FET |

**Lead-free code**

|    |                       |
|----|-----------------------|
| A  | Lead-free, Sn-Bi      |
| AZ | Lead-free*1, Sn-Bi    |
| AT | Lead-free, Sn         |
| AY | Lead-free*1, Matte-Sn |

\*1: High-melting-point solder excepted in RoHS is contained internally.

**Taping direction**

**E1** **E2**

**T1** **T1B**

**Packaging code**

|  |  |
|--|--|
| -  | ZK   |
| 3pXSOF03 (0812)  (1.2x1.2x0.3)<br>3pin Mini Mold Thin Type  (2.9x2.8x0.9)<br>SOT-23F  (2.9x2.4x0.85) | MP-25ZK  (10.0x15.25x4.45)<br>MP-3ZK  (6.5x10.4x2.3) |
| S  | ZP   |
| MP-25K  (10.0x29.6x4.45)<br>MP-45F  (10.0x28.5x4.5)<br>MP-3  (10.0x30.6x4.45)                        | MP-25ZP  (10.0x15.25x4.45)                           |

**Serial number, Packages**

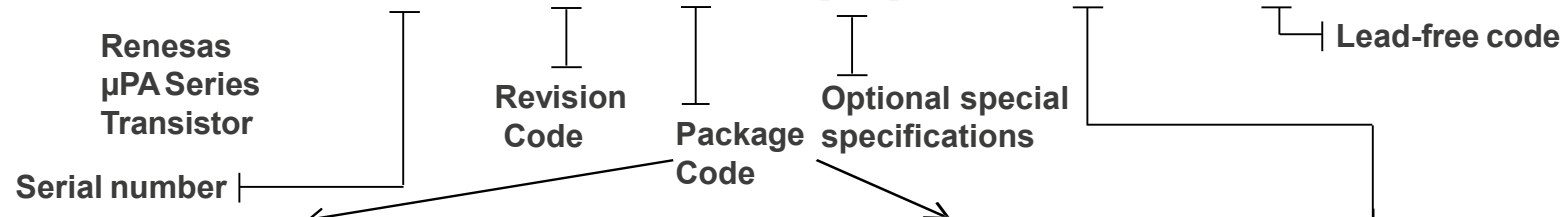
|        |   |
|--------|---|
| NxxxxR | SOT-23F   |
| NxxxxS | SOT-23F   |
| NxxxxP | SOT-23F, 3pin TMM, MP-3ZK   |
| NxxxxN | 3pin XSOF03, 3pin TMM, SOT-23F, MP-45F, MP-25K(TO-220), MP-25ZK(TO-263) |

## Renesas N Series Transistors

Ex: N0400P is P channel MOSFET in MP-3ZK package.

Note:  
Codes shown in gray color are optional.

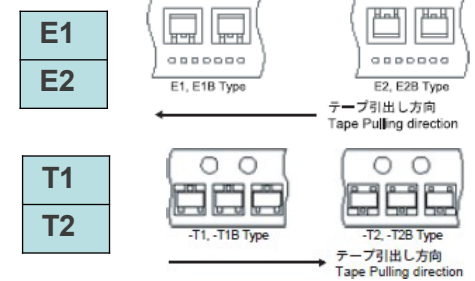
# MPA 2735 X GR (0) – E1 - AT



|           |                       |
|-----------|-----------------------|
| <b>A</b>  | Lead-free, Sn-Bi      |
| <b>AZ</b> | Lead-free*4, Sn-Bi    |
| <b>AT</b> | Lead-free, Sn         |
| <b>AY</b> | Lead-free*4, Matte-Sn |

|                |             |                 |   |                     |                               |
|----------------|-------------|-----------------|---|---------------------|-------------------------------|
| 80,81*1        | <b>C/GR</b> | 16pin DIP/SOP   | <b>2200-11</b>  | <b>T1M</b>          | 8pin VSOF(1629)               |
| 500-05         | <b>T</b>    | 5pin MM(SC-74A) | <b>2350-72, 2380</b>                                    | <b>T1G/<br/>T1P</b> | 4pin EFLIP/<br>4pin EFLIP-LGA |
| 507, 508       | <b>TE</b>   | 5pin TMM(SC-95) | <b>2374-78</b>  | <b>T1P</b>          | 6pin EFLIP-LGA                |
| 509            | <b>TA</b>   | 5pin MM(SC-74A) | <b>2460-65</b>  | <b>T1Q</b>          | 8pin HUSON(2027)              |
| 570-04         | <b>T</b>    |                 | <b>2520-93</b>  | <b>T1H</b>          | 8pin VSOF(2429)               |
| 600-09         | <b>T</b>    | 6pin MM(SC-74)  | <b>2650, 2680</b>                                       | <b>T1E</b>          | 6LD3x3MLP                     |
| 610,611        | <b>TA</b>   |                 | <b>2670-72</b>  | <b>T1R</b>          | 8pin HUSON(2027)              |
| 620-22, 650-54 | <b>TT</b>   | 6pin WSOF(1620) | <b>2700-2721</b>  | <b>GR</b>           | 8pin TSSOP                    |
| 670-75/677-79  | <b>T/TB</b> | 6pin SSP(SC-88) | <b>2722-27, 2731-32,<br/>2743-49, 2760,<br/>2763</b>    | <b>T1A</b>          | 8pin HUSON(2027)              |
| 800-13*2       | <b>T</b>    | 6pin 65MM       | <b>2728, 2733-42,<br/>2750-57, 2761-62,<br/>2770-94</b> | <b>GR</b>           | 8pin SOP                      |
| 828-895*2      | <b>TD</b>   | 6pin L2MM(1208) | <b>2800-13, 2821-22</b>                                 | <b>T1L</b>          | 8pin HVSON(3333)              |
| 900*3          | <b>TU</b>   |                 | <b>2814-20, 2825</b>                                    | <b>T1S</b>          | HWSON-8                       |
| 17xx           | <b>G</b>    | 8pin SOP        | <b>2987</b>   | <b>GS</b>           | 16pin DIP                     |
| 1803-1890      | <b>GR</b>   | 8pin TSSOP      |   |                     |                               |
| 1901-81        | <b>TE</b>   | 6pin TMM(SC-95) |   |                     |                               |
| 2001-04        | <b>C/GR</b> | 16pin DIP/SOP   |   |                     |                               |

### Taping direction



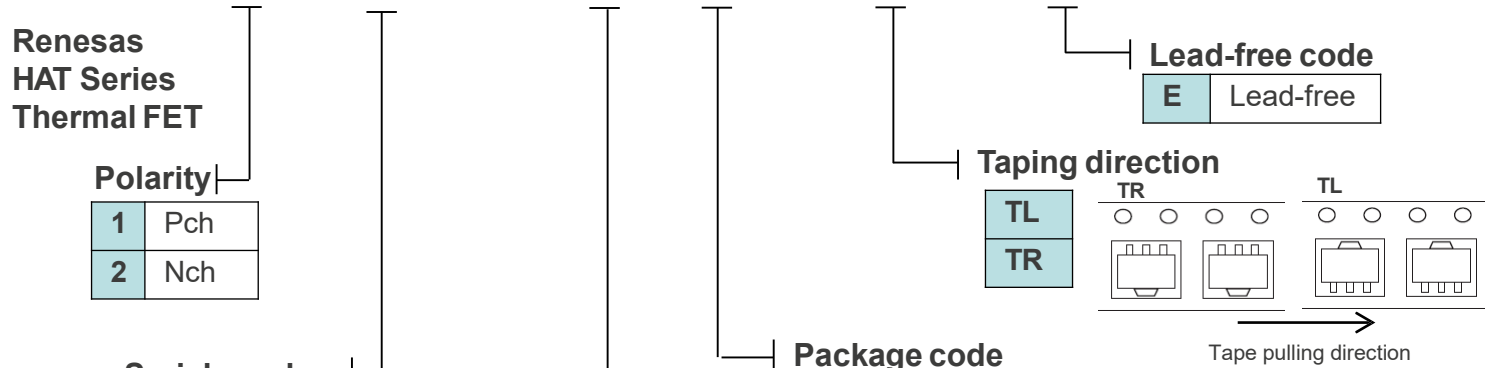
- \*1: PNP-NPN transistor array.
- \*2: NPN Bipolar transistors(with built-in 2 elements).
- \*3: NPN SiGe transistor(IC) for RF.
- \*4: High-melting-point solder excepted in RoHS is contained internally.

## Renesas μPA Series Transistors

Ex: μPA2735GR is Switching N channel MOSFET in 8pin SOP package.

Note:  
Codes shown in gray color are optional.

# HAF 2 007 - 90 S - TL - E



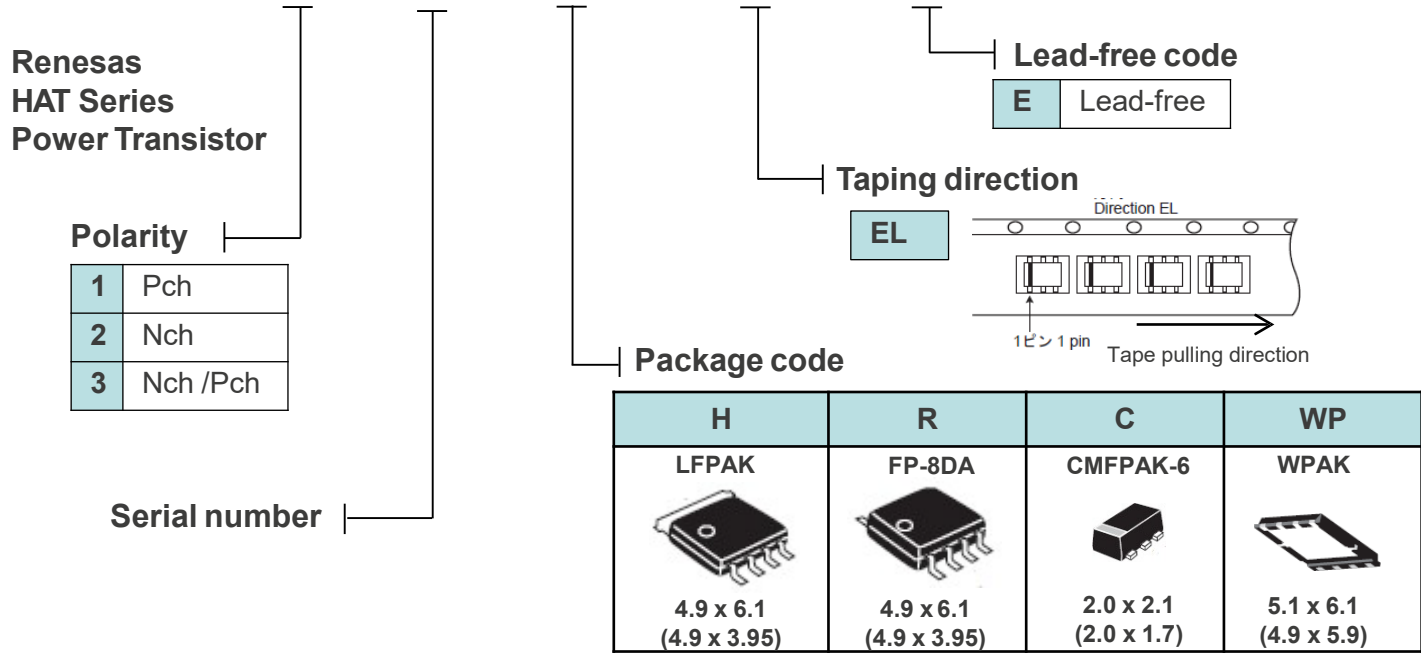
| L  |   | R  |
|--|---|--|
| <b>DPAK(L)</b><br><br>10.2 x 21.0<br>(12.2 x 10)   | <b>DPAK(L)-(2)</b><br><br>6.5 x 23.4<br>(6.5 x 7.2) | <b>FP-8DA</b><br><br>4.9 x 6.1<br>(4.9 x 3.95) |
| S  |   | -  |
| <b>DPAK(S)-1</b><br><br>10.2 x 13.0<br>(10.2 x 10) | <b>DPAK(S)</b><br><br>6.5 x 9.5<br>(6.5 x 7)        | <b>TO-220FM</b><br><br>10.5 x 31<br>(10 x 17)  |

## Renesas HAF Series Thermal FET Power Transistors

Ex: HAF2007-90S is N channel MOSFET in DPAK(S)package.

Note:  
Codes shown in gray color are optional.

# HAT 2 256 R - EL - E



## Power HAT Series Power Transistors

Ex: HAT2256R is N channel MOSFET in FP-8DApackage.

Note:  
Codes shown in gray color are optional.

# H5 N 50 04 PL - E0 - E #T2

**Renesas Power Transistor**

**Series name**

|    |           |
|----|-----------|
| H5 | H5 Series |
| H7 | H7 Series |
| H8 | H8 Series |

**Polarity**

|   |     |
|---|-----|
| P | Pch |
| N | Nch |













**Serial number**

**Voltage code (V)**

|    |         |
|----|---------|
| 02 | 20-29   |
| 03 | 30-39   |
| 04 | 40-49   |
| 06 | 60-69   |
| 08 | 80-89   |
| 10 | 100-109 |
| 15 | 150-159 |
| 20 | 200-209 |
| 23 | 230-239 |
| 25 | 250-259 |
| 28 | 380-289 |
| 30 | 300-309 |
| 50 | 500-509 |
| 60 | 600-609 |

**Optional special specifications**

**Package code**

|  |   |   |   |
|--|---|---|---|
| DS   | DL  | LS  | LD  |
| DPAK(S)<br><br>6.5 x 9.5<br>(6.5 x 7)       | DPAK(L)-(2)<br><br>6.5 x 23.4<br>(6.5 x 7.2) | LDPAK(S)-(1)<br><br>10.2 x 13.0<br>(10.2 x 10) | DPAK(L)<br><br>10.2 x 21.0<br>(12.2 x 10)        |
| AB   | FL  | FM  | FP  |
| TO-220AB<br><br>11.5 x 29<br>(11.5 x 15)    | TO-220FL<br><br>10 x 27.5<br>(10 x 15)       | TO-220FM<br><br>10 x 31<br>(10 x 17)           | TO-220FP<br><br>10.16 x 28.85<br>(10.16 x 18.87) |
| MD   | P   | PF  | PL  |
| TO-92MOD<br><br>4.8 x 18.1<br>(4.8 x 8.0) | TO-3P<br><br>15.6 x 37.9<br>(15.6 x 19.9)  | TO-3PFM<br><br>15.6 x 40.9<br>(15.9 x 19.9)  | TO-3PL<br><br>20 x 46<br>(20 x 26)             |

**Lead-free code**

|   |           |
|---|-----------|
| E | Lead-free |
|---|-----------|

**Packing code**

|    |      |
|----|------|
| -  | Bulk |
| T2 | Tube |

## Renesas H5N, H5P, H7N, H7P, H8N Series Power Transistors

Ex: H5N5004PL is N channel MOSFET in TO-3PL package.

Note: Codes shown in gray color are optional.

# NP 110 N 04 P U K - E1 - AY

Renesas NP Series Power MOSFETs

| I <sub>D(DC)</sub> Rating(A) |    |     |     |
|------------------------------|----|-----|-----|
| 15                           | 15 | 70  | 70  |
| 16                           | 16 | 74  | 74  |
| 20                           | 20 | 75  | 75  |
| 22                           | 22 | 80  | 80  |
| 23                           | 23 | 82  | 82  |
| 28                           | 28 | 83  | 83  |
| 32                           | 32 | 84  | 84  |
| 33                           | 33 | 88  | 88  |
| 34                           | 34 | 89  | 89  |
| 35                           | 35 | 90  | 90  |
| 36                           | 36 | 100 | 100 |
| 40                           | 40 | 109 | 109 |
| 48                           | 48 | 110 | 110 |
| 50                           | 50 | 160 | 160 |
| 52                           | 52 | 161 | 161 |
| 55                           | 55 | 180 | 180 |
| 60                           | 60 |     |     |

Polarity

|   |     |
|---|-----|
| P | Pch |
| N | Nch |

V<sub>DSS</sub>(V)





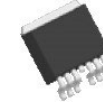




|     |     |
|-----|-----|
| 03  | 30  |
| 04  | 40  |
| 055 | 55  |
| 06  | 60  |
| 075 | 75  |
| 10  | 100 |

Series Name (Generation)

Protection diode/ Source drive voltage

|   |          |      |
|---|----------|------|
| B | w/ diode | 2.5V |
| L | w/ diode | 4.5V |
| H | w/ diode | 10V  |
| D | w/o      | 4.5V |
| U | w/o      | 10V  |

Package Code

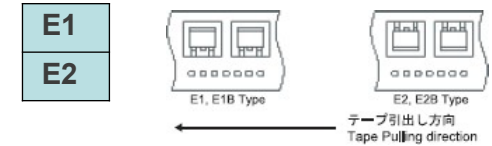
| K  | M   | N   | P   | T   | H   | S   | V   | Y   |
|--|---|---|---|---|---|---|---|---|
| MP-25ZK  | MP-25K (TO-220)   | MP-25SK (TO-262)  | MP-25ZP (TO-263)  | MP-25ZT (TO-263-7p)   | MP-3  | MP-3ZK  | MP-3ZP (TO-252)   | 8pin HSON   |
|  |  |  |  |  |  |  |  |  |
| 10 x 15.25<br>(10 x 9.15)  | 10 x 29.6<br>(10 x 15.9)  | 10 x 23.8<br>(10 x 10.1)  | 10 x 15.25<br>(10 x 9.15)   | 10 x 14.85<br>(10 x 9.15)   | 6.5 x 13.7<br>(6.5 x 5.5)   | 6.5 x 10.4<br>(6.5 x 6.1)   | 6.5 x 10.4<br>(6.5 x 6.1)   | 6 x 5.15<br>(5.4 x 5.15)  |

Lead-free code

|    |                       |
|----|-----------------------|
| A- | Lead-free, Sn-Bi      |
| AZ | Lead-free*1, Sn-Bi    |
| AT | Lead-free, Sn         |
| AY | Lead-free*1, Matte-Sn |

\*1: High-melting-point solder excepted in RoHS is contained internally.

Taping direction



NP series features:

- ✓ Super low on-state resistance(R<sub>on</sub>)
- ✓ Low total gate charge(Q<sub>G</sub>)
- ✓ High current rating
- ✓ High reliability(Compliant AEC-Q101)

## Renesas NP Series Power MOSFETs

Ex: NP110N04PUK is N channel MOSFET in MP-25ZP package(40V/110A).

Note: Codes shown in gray color are optional.



# Thyristor

## CR 08 AS - 12 A<sup>(\*1)</sup> A T14 # B 1 0

(\*1): The hyphen might be omitted because orderable part number is limited to 18 digits.

### Renesas Thyristor

#### I<sub>T(AV)</sub> (A)

|    |              |
|----|--------------|
| 02 | 0.3          |
| 03 | 0.3          |
| 04 | 0.4          |
| 05 | 0.1 (CR05BS) |
|    | 0.3 (CR05AM) |
|    | 0.5 (CR05AS) |
| 08 | 0.8          |
| 2  | 2            |
| 3  | 3            |
| 5  | 5            |
| 6  | 6            |
| 8  | 8            |
| 12 | 12           |
| 25 | 25           |

#### V<sub>DRM</sub> (V)

|    |     |
|----|-----|
| 8  | 400 |
| 12 | 600 |
| 16 | 800 |

#### IGT item (optional)

|      |             |
|------|-------------|
| none | Standard    |
| A    | 1 - 30 μA   |
| B    | 20 - 50 μA  |
| C    | 40 - 100 μA |
| D    | 1 - 50 μA   |
| E    | 20 - 100 μA |

#### Version

|      |                             |
|------|-----------------------------|
| none | 125°C                       |
| A    | 125°C                       |
| B    | 150°C                       |
| D    | 150°C                       |
| G    | TO-220F(Ver.S), To be EOLed |
| UE   | ex-NEC alternative          |

#### Quality grade & Specification

|   |                                  |          |
|---|----------------------------------|----------|
| B | Industry use<br>(Standard grade) | Standard |
|   |                                  | Custom   |
| F | Consumer use<br>(Standard grade) | Standard |
|   |                                  | Custom   |


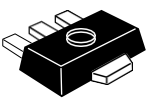
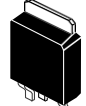
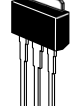
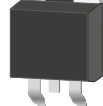
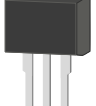





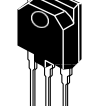
#### Internal Code

|   |                                   |   |
|---|-----------------------------------|---|
| 0 | Terminal Pb-free (RoHS Compliant) | TO-92*, MP-3A<br>DPAK(L)-(3)<br>TO-220F/FL<br>TO-3PFM |
|   |                                   | TO-220FPA(Ver.S)                                      |
|   |                                   | TO-220FPA<br>TO-220ABA<br>TO-262/263                  |
| 1 | Completely Pb-free                | MPAK, UPAK  |
| D |                                   | TO-92   |

#### Lead-forming(optional), Packing

|         |                         |
|---------|-------------------------|
| A       | Lead-forming type       |
| TB      | TO-92 taping            |
| T1/T2   | Tape & Reel (800 pcs.)  |
| T13/T23 | Tape & Reel (3000 pcs.) |
| T14/T24 | Tape & Reel (4000 pcs.) |

#### Package

| BS  | AS  | AS  | AS   | CS  | CS  | AM / BM   | CM  | LM  | PM  | FM  | RM  |
|---|---|---|--|---|---|---|---|---|---|---|---|
| MPAK  | UPAK  | MP-3A   | DPAK(L)-(3)  | TO-263  | TO-262  | TO-92   | TO-220ABA   | TO-220FL  | TO-220F   | TO-220FPA   | TO-3PFM   |
|  |  |  |  |  |  |  |  |  |  |  |  |
| NRND  |   |   |  |   |   |   |   | NRND  | To be EOLed   |   |   |

# Triac

## BCR 16 FM (\*1) 12 L B (\*1) 1 A8 # B G 0

(\*1): Hyphens might be omitted because orderable part number is limited to 18 digits.

Renesas Triac

I (RMS)(A)

|    |     |
|----|-----|
| 08 | 0.8 |
| 1  | 1   |
| 2  | 2   |
| 3  | 3   |
| 4  | 4   |
| 5  | 5   |
| 6  | 6   |
| 8  | 8   |
| 10 | 10  |
| 12 | 12  |
| 16 | 16  |
| 20 | 20  |
| 25 | 25  |
| 30 | 30  |
| 40 | 40  |

V<sub>DRM</sub>(V)

|    |      |
|----|------|
| 8  | 400  |
| 12 | 600  |
| 14 | 700  |
| 16 | 800  |
| 20 | 1000 |
| 30 | 1500 |

Version

|   |                             |
|---|-----------------------------|
| A | 125°C, Standard             |
| B | 150°C, Standard             |
| C | Application specified       |
| D | (Low inrush current use)    |
| E | TO-220F(2), To be EOLed     |
| G | TO-220F(Ver.S), To be EOLed |
| H | High Commutation            |
| J | Next-Gen. Chip              |

Lead-forming(optional), Packing

|         |                         |
|---------|-------------------------|
| A□      | Lead-forming type       |
| TB      | TO-92 taping            |
| T1/T2   | Tape & Reel (800 pcs.)  |
| T13/T23 | Tape & Reel (3000 pcs.) |
| T14/T24 | Tape & Reel (4000 pcs.) |

IGT item (optional)

|      |                  |
|------|------------------|
| none | Standard         |
| 1    | High-sensitivity |

Commutation Characteristics

|         |                             |
|---------|-----------------------------|
| L, none | Guaranteed (for L-load)     |
| R       | Non-guaranteed (for R-load) |

Internal Code

|   |                                   |  |
|---|-----------------------------------|--|
| 0 | Terminal Pb-free (RoHS Compliant) | TO-92*, MP-3A<br>DPAK(L)-(3)<br>TO-220F/FL<br>TO-3P, TO-3PFM |
| G |                                   | TO-220FPA(Ver.S)   |
| H |                                   | TO-220FPA<br>TO-220ABA<br>TO-262/263                         |
| 1 | Completely Pb-free                | UPAK   |
| D |                                   | TO-92, SOT-223   |

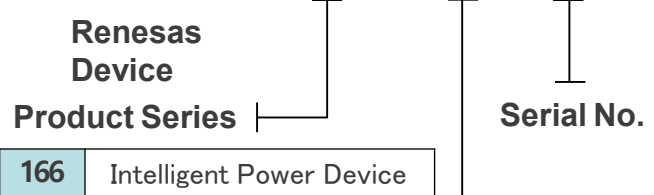
Quality grade & Specification

|   |                  |          |
|---|------------------|----------|
| B | Industry use     | Standard |
| C | (Standard grade) | Custom   |

Package

|      |       |             |        |        |         |       |           |          |         |           |       |         |
|------|-------|-------------|--------|--------|---------|-------|-----------|----------|---------|-----------|-------|---------|
| AS   | AS    | AS          | CS     | CS     | DS      | AM    | CM        | LM       | PM / PR | FM / FR   | AM    | RM      |
| UPAK | MP-3A | DPAK(L)-(3) | TO-263 | TO-262 | SOT-223 | TO-92 | TO-220ABA | TO-220FL | TO-220F | TO-220FPA | TO-3P | TO-3PFM |
|      |       |             |        |        |         |       |           |          |         |           |       |         |

# MPD 166 0 10 T1F - E1 - AY

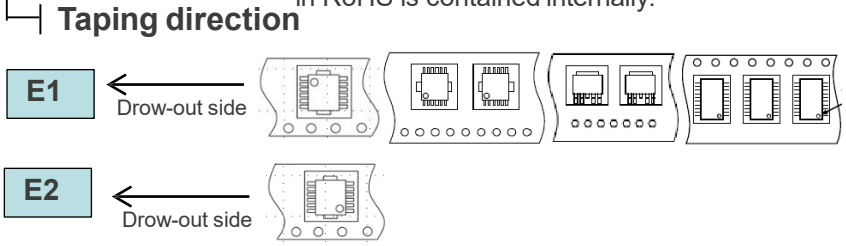


**Lead-free code**

|    |                       |
|----|-----------------------|
| AZ | Lead-free*1, Sn-Bi    |
| AY | Lead-free*1, Matte-Sn |

\*1: High-melting-point solder excepted in RoHS is contained internally.

|        | V <sub>DSS</sub> (V) | I <sub>L</sub> (A) | R <sub>DS(on)</sub> (mΩ) | P <sub>D</sub> (W) | Ch |
|--------|----------------------|--------------------|--------------------------|--------------------|----|
| 005GR  | 35                   | 2                  | 100                      | 1                  | 1  |
| 007T1F | 28                   | 30                 | 10                       | 59                 | 1  |
| 009T1F | 28                   | 30                 | 10                       | 59                 | 1  |
| 010T1F | 28                   | 30                 | 10                       | 59                 | 1  |
| 011TIJ | 28                   | Self limited       | 25                       | 2                  | 2  |
| 013TIJ | 28                   | Self limited       | 60                       | 2                  | 2  |
| 015GR  | 35                   | 2                  | 100                      | 1.5                | 2  |
| 017TIF | 28                   | Self limited       | 6                        | 1.2                | 1  |
| 019TIF | 28                   | Self limited       | 13.5                     | 59                 | 1  |
| 020T1F | 28                   | Self limited       | 10                       | 1.2                | 1  |
| 021T1F | 28                   | Self limited       | 10                       | 1.2                | 1  |
| 100GR  | 40                   | Self limited       | 160                      | 1.5                | 1  |
| 101GR  | 40                   | Self limited       | 160                      | 2                  | 2  |
| 104GS  | 100                  | Self limited       | 90                       | 2                  | 2  |



**Package**

| GR                         | GS                         | T1F                      | TiJ                       |
|----------------------------|----------------------------|--------------------------|---------------------------|
| 8-pin SOP                  | 20-pin SOP                 | 5-pin TO-252 (MP-3ZK)    | 12-pin HSSOP              |
|                            |                            |                          |                           |
| 5.35 x 6.0<br>(5.35 x 4.4) | 12.7 x 7.7<br>(12.7 x 5.6) | 6.5 x 9.8<br>(6.5 x 6.1) | 7.8 x 10.3<br>(6.4 x 7.5) |

**Type**






|   |           |
|---|-----------|
| 0 | High Side |
| 1 | Low Side  |

## Renesas Intelligent Power Device

Ex: μPD166005GR is Single N-channel High Side Intelligent Power Device in 8-pin SOP package.

# FA4A3Q(0) - T1B - A

**Package code**

|   |   |
|---|---|
| C | SP-8<br>   |
| F | 3pin MM<br><br>(2.9 x 2.8 x 1.4)                         |
| G | 3pin SSP<br><br>(2.0 x 2.1 x 0.9)                        |
| H | 3pin PoMM<br><br>4.5 x 4.0<br>(4.5 x 2.5)                |
| K | 3pin USM<br><br>1.6 x 1.6 x 0.75<br>(1.6 x 0.8 x 0.75) |

**10<sup>n</sup> of R<sub>1</sub> Index \*1**

|   |                 |
|---|-----------------|
| 2 | 10 <sup>2</sup> |
| 3 | 10 <sup>3</sup> |
| 4 | 10 <sup>4</sup> |

**R<sub>1</sub> Value**

|   |     |
|---|-----|
| A | 1   |
| F | 2.2 |
| L | 4.7 |
| J | 3.3 |

**R<sub>2</sub>/R<sub>1</sub> Ratio**

|   |                   |
|---|-------------------|
| A | R <sub>1</sub> =0 |
| K | 10/47             |
| L | 0.47              |
| M | 1                 |
| N | 10/4.7            |
| P | 10/2.2, 47/10     |
| Q | 10                |
| R | 47/2.2            |
| Z | 0                 |

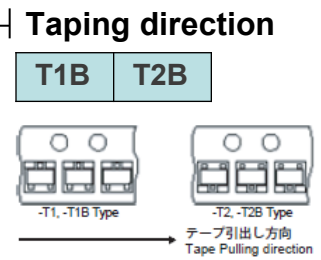
**Classification & Specification**

|    |  |
|----|--|
| A* | Small signal NPN (I <sub>C</sub> =100mA) type A        |
| B1 | Semi-power NPN (I <sub>C</sub> =700mA) type A          |
| D1 | Semi-power NPN (I <sub>C</sub> =1000mA) type A         |
| D2 | Semi-power NPN w/ ZeDi (I <sub>C</sub> =1000mA) type C |
| E1 | Semi-power NPN w/ ZeDi (I <sub>C</sub> =2000mA) type D |
| N* | Small signal PNP (I <sub>C</sub> =-100mA) type B       |
| P1 | Semi-power PNP (I <sub>C</sub> =-700mA) type B         |
| Q1 | Semi-power PNP (I <sub>C</sub> =-2000mA) type B        |
| R1 | Semi-power PNP (I <sub>C</sub> =-1000mA) type B        |

**Optional special specifications**

**Lead-free code**

|    |                  |
|----|------------------|
| A  | Lead-free, Sn-Bi |
| AT | Lead-free, Sn    |

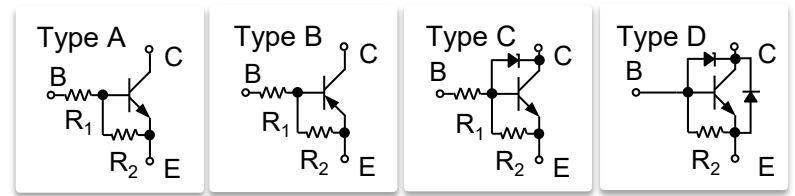


\*1: When R<sub>1</sub> = 0, it shows R<sub>2</sub> value.

Paradigm of R<sub>1</sub>,R<sub>2</sub> (KΩ)Combination Code

|     | R <sub>1</sub> | R <sub>2</sub> |     | R <sub>1</sub> | R <sub>2</sub> |
|-----|----------------|----------------|-----|----------------|----------------|
| A4A | -              | 10             | F4N | 22             | 47             |
| A3M | 1              | 1              | F4Z | 22             | -              |
| A3Q | 1              | 10             | J3P | 3.3            | 10             |
| A4L | 10             | 4.7            | L2N | 0.47           | 1              |
| A4M | 10             | 10             | L2Q | 0.47           | 4.7            |
| A4P | 10             | 47             | L3M | 4.7            | 4.7            |
| A4Z | 10             | -              | L3N | 4.7            | 10             |
| F2Q | 0.22           | 2.2            | L3Z | 4.7            | -              |
| F3M | 2.2            | 2.2            | L4K | 47             | 10             |
| F3P | 2.2            | 10             | L4L | 47             | 22             |
| F3R | 2.2            | 47             | L4M | 47             | 47             |
| F4M | 22             | 22             | L4Z | 47             | -              |

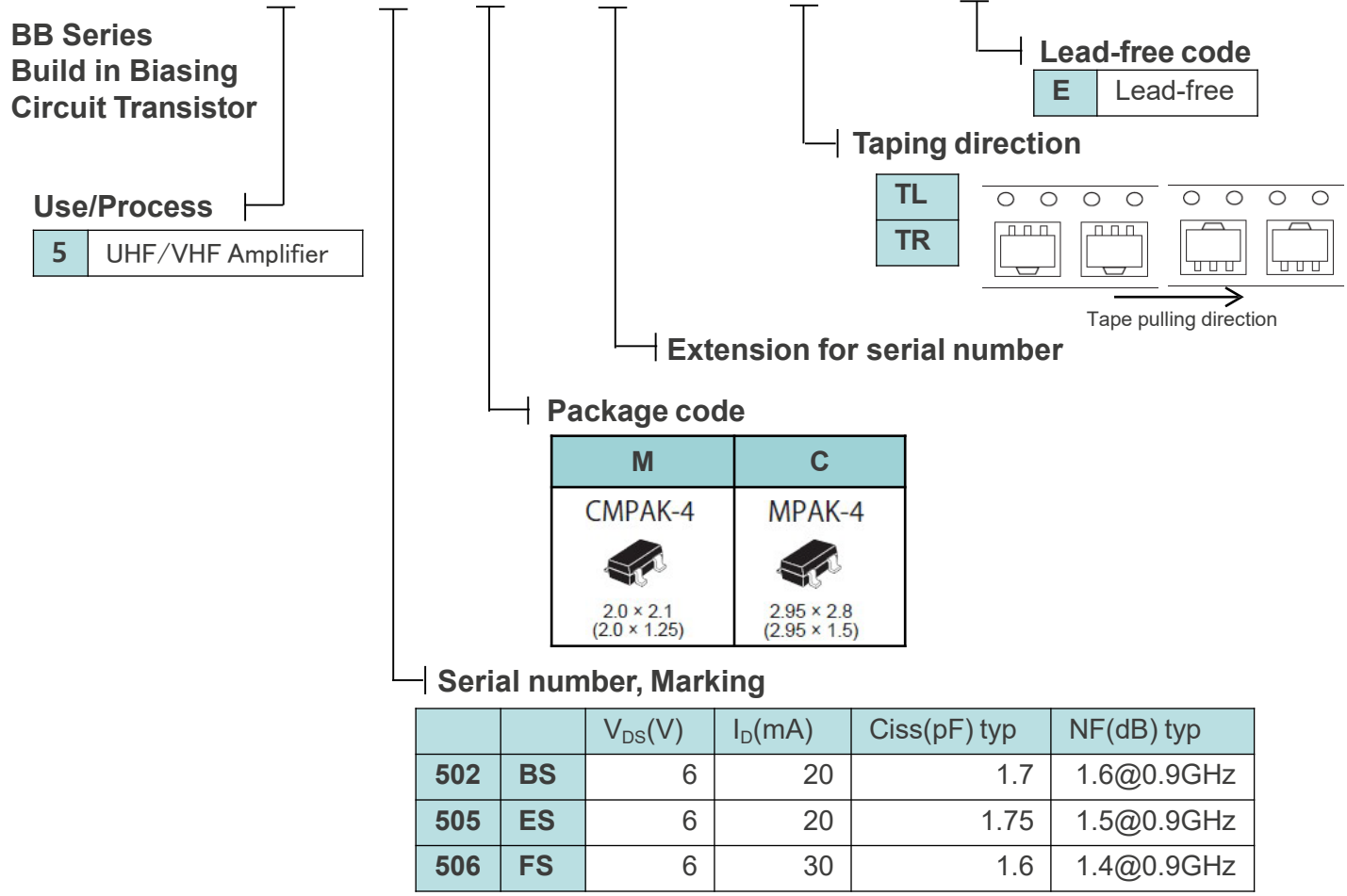
**Equivalent Circuit (type)**



## Renesas transistors with built-in resistor

Ex: FA4A3Q is NPN transistor with built-in resistor in 3pin MM package (I<sub>C</sub>=100mA, R<sub>1</sub>=1KΩ, R<sub>2</sub>=10KΩ)

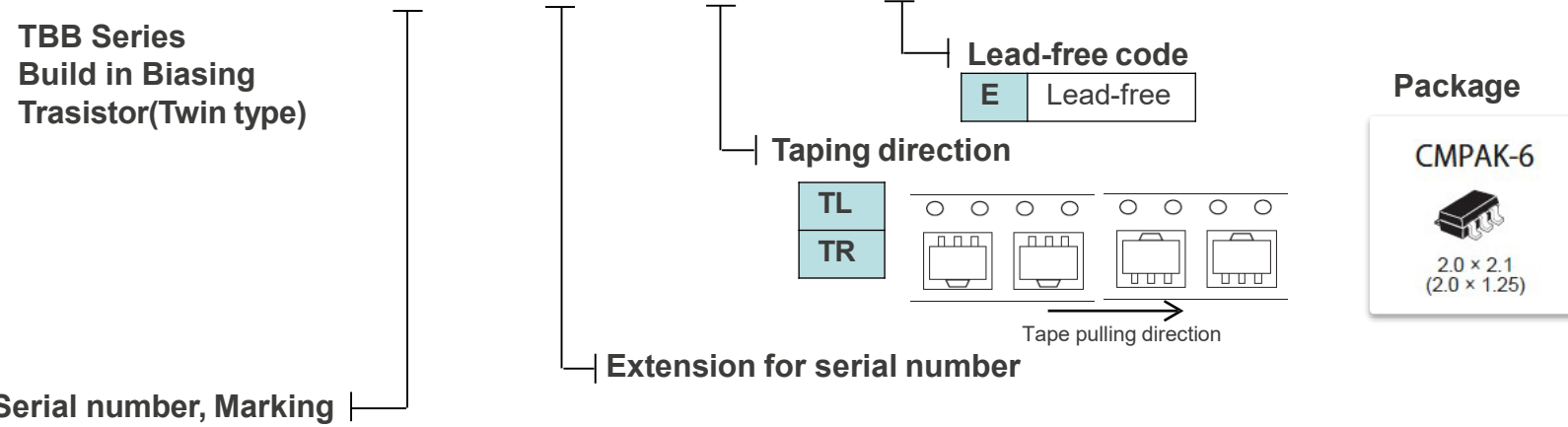
# BB 5 05 C ES - TL - E



## Renesas BB Series Build-in Biasing Circuit Transistors

Ex: BB505C is Build-in Biasing Circuit MOSFET in CMPAK-4 package.

# TBB 1005 EM TL - E



|    |    | Ratings             |                     | FET1 Characteristics |               |             | FET2 Characteristics |               |             |
|----|----|---------------------|---------------------|----------------------|---------------|-------------|----------------------|---------------|-------------|
|    |    | V <sub>DS</sub> (V) | I <sub>D</sub> (mA) | Ciss(pF) typ         | lyfsl(mS) typ | NF(dB) typ  | Ciss(pF) typ         | lyfsl(mS) typ | NF(dB) typ  |
| 04 | DM | 6                   | 30                  | 1.8                  | 26            | 1.7@0.9GHz  | 2.7                  | 32            | 1.2@0.2GHz  |
| 05 | EM | 6                   | 30                  | 1.8                  | 26            | 1.7@0.9GHz  | 2.6                  | 25            | 1.2@0.2GHz  |
| 10 | KM | 6                   | 30                  | 2.1                  | 29            | 1.1@0.2GHz  | 2.1                  | 29            | 1.1@0.2GHz  |
| 12 | MM | 6                   | 30                  | 1.6                  | 32            | 1.95@0.9GHz | 2.7                  | 30            | 1.95@0.2GHz |
| 16 | RM | 6                   | 30                  | 2.2                  | 35            | 1@0.2GHz    | 2.2                  | 35            | 1@0.2GHz    |

## Renesas TBB Series (Twin type) Build in Biasing Circuit Transistors

Ex: TBB1005EM is Twin Build-in Biasing Circuit MOSFET in CMPAK-6 package.

# RD 6.8 FM (0) - T1 - AY








Renesas RD  
Serise Zener Diode

Optional special  
specifications

Lead-free code

Standard  $V_Z(V)^*$

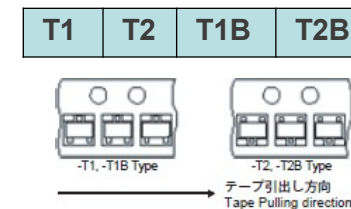
|     |           |     |             |     |               |
|-----|-----------|-----|-------------|-----|---------------|
| 2.0 | 1.9 - 2.2 | 8.2 | 7.7 - 8.7   | 36  | 34.0 - 38.0   |
| 2.2 | 2.1 - 2.4 | 9.1 | 8.5 - 9.6   | 39  | 37.0 - 41.0   |
| 2.4 | 2.3 - 2.6 | 10  | 9.4 - 10.6  | 43  | 40.0 - 45.0   |
| 2.7 | 2.5 - 2.9 | 11  | 10.4 - 11.6 | 47  | 44.0 - 49.0   |
| 3.0 | 2.8 - 3.2 | 12  | 11.4 - 12.6 | 51  | 48.0 - 54.0   |
| 3.3 | 3.1 - 3.5 | 13  | 12.4 - 14.1 | 56  | 53.0 - 60.0   |
| 3.6 | 3.4 - 3.8 | 15  | 13.8 - 15.6 | 62  | 58.0 - 66.0   |
| 3.9 | 3.7 - 4.1 | 16  | 15.3 - 17.1 | 68  | 64.0 - 72.0   |
| 4.3 | 4.0 - 4.5 | 18  | 16.8 - 19.1 | 75  | 70.0 - 79.0   |
| 4.7 | 4.4 - 4.9 | 20  | 18.8 - 21.2 | 82  | 77.0 - 87.0   |
| 5.1 | 4.8 - 5.4 | 22  | 20.8 - 23.3 | 91  | 85.0 - 96.0   |
| 5.6 | 5.3 - 6.0 | 24  | 22.8 - 25.6 | 100 | 94.0 - 106.0  |
| 6.2 | 5.8 - 6.6 | 27  | 25.1 - 28.9 | 110 | 104.0 - 116.0 |
| 6.8 | 6.4 - 7.2 | 30  | 28.0 - 32.0 | 120 | 114.0 - 126.0 |
| 7.5 | 7.0 - 7.9 | 33  | 31.0 - 35.0 |     |               |

|    |  |                    |
|----|--|--------------------|
| FM | 2pin PoMM<br><br>(4.7×1.5×2.05) | 1000mW             |
| FS | 2pin SPM<br><br>(3.5×1.6×0.98)  |                    |
| S  | 2pin SSP<br>                    | 200mW              |
| SL | <br>(2.5×1.25×0.9)              | 200mW<br>low noise |
| UJ | 2pin USM<br>                    | 150mW<br>low noise |
| UM | <br>(2.1×0.8×0.7)               | 150mW              |
| MW | 3pin MM<br><br>(2.9×2.8×1.4)  | 200mW<br>Dual type |

|    |                       |
|----|-----------------------|
| A  | Lead-free, Sn-Bi      |
| AZ | Lead-free*1, Sn-Bi    |
| AT | Lead-free, Sn         |
| AY | Lead-free*1, Matte-Sn |

\*1: High-melting-point solder excepted in RoHS is contained internally.

Taping direction



| T1                              | T2                              | T4                              |
|---------------------------------|---------------------------------|---------------------------------|
| Ammo pack<br>Box (2000 pcs/box) | Ammo pack<br>Real (5000pcs/box) | Ammo pack<br>Box (5000 pcs/box) |

Note : Codes shown in gray color are optional.

## Renesas RD Series Zener Diodes

Ex: RD6.8FM is Zenner diode( $V_Z=6.8V$ ) in 2pin PoMM package.

# NNCD 6.2 (0) LH - T1 - AT

Renesas NNCD Series  
ESD Noise-Clipping Diode






Breakdown voltage(V)\*

|     |             |    |               |
|-----|-------------|----|---------------|
| 2.0 | 1.90 - 2.20 | 10 | 9.45 - 10.58  |
| 2.2 | 2.10 - 2.40 | 11 | 10.40 - 11.60 |
| 2.4 | 2.30 - 2.60 | 12 | 11.38 - 12.64 |
| 2.7 | 2.50 - 2.90 | 13 | 12.43 - 14.00 |
| 3.3 | 3.10 - 3.50 | 15 | 13.80 - 15.56 |
| 3.6 | 3.40 - 3.80 | 16 | 15.31 - 17.14 |
| 3.9 | 3.70 - 4.10 | 18 | 16.89 - 19.06 |
| 4.3 | 4.00 - 4.49 | 20 | 18.80 - 21.14 |
| 4.7 | 4.40 - 4.92 | 22 | 20.81 - 23.25 |
| 5.1 | 4.82 - 5.39 | 24 | 22.86 - 25.66 |
| 5.6 | 5.29 - 5.94 | 27 | 25.10 - 28.90 |
| 6.2 | 5.84 - 6.55 | 30 | 28.00 - 32.00 |
| 6.8 | 6.44 - 7.17 | 33 | 31.00 - 35.00 |
| 7.5 | 7.03 - 7.87 | 36 | 34.00 - 38.00 |
| 8.2 | 7.73 - 8.67 | 39 | 37.00 - 41.00 |
| 9.1 | 8.53 - 9.58 |    |               |

\*The Breakdown voltage range are DA package products, Others package are little different range.

Optional special specifications

Package & products feature

|        |  |                 |   |
|--------|--|-----------------|---|
| DA     | <br>2pin SSP<br>(2.5×1.25×0.9)  | 200mW           | High ESD                                    |
| DT     |  |                 | High ESD, 2-way connection                  |
| MDT    |  |                 | Low capacitance, High ESD, 2-way connection |
| C      | <br>2pin USM<br>(2.1×0.8×0.7)   | 150mW           | High ESD                                    |
| F      |  |                 | High ESD                                    |
| MF     | <br>3pin MM<br>(2.9×2.8×1.4)    | 200mW Dual type | Low capacitance, High ESD                   |
| ST     |  |                 | High ESD, 2-way connection                  |
| G      |  |                 | High ESD                                    |
| LG, RG | <br>5pin MM<br>(2.9×2.8×1.4)   | 200mW Quad type | Low capacitance                             |
| MG     |  |                 | Low capacitance, High ESD                   |
| H, PH  |  |                 | High ESD                                    |
| LH, RH | <br>5pin SSP<br>(2.0×2.1×0.9) |                 | Low capacitance                             |

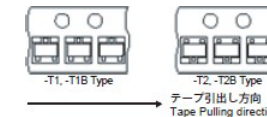
Lead-free code

|    |                       |
|----|-----------------------|
| A  | Lead-free, Sn-Bi      |
| AZ | Lead-free*1, Sn-Bi    |
| AT | Lead-free, Sn         |
| AY | Lead-free*1, Matte-Sn |

\*1: High-melting-point solder excepted in RoHS is contained internally.

Tapping direction

|    |    |     |
|----|----|-----|
| T1 | T2 | T1B |
|----|----|-----|



Note:  
Codes shown in gray color are optional.

## Renesas NNCD Series ESD Noise-Clipping Diodes

Ex: NNCD6.2LH is Quad type ESD Noise-Clipping Diode in 5pin SSP package.



# NSAD 500 S - T1 - A

Renesas NSAD Series  
Surge Absorber Diode

Lead-free code

|    |                  |
|----|------------------|
| A  | Lead-free, Sn-Bi |
| AT | Lead-free, Sn    |

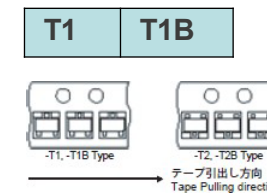
Package




NSAD Series

| NSAD Series | VBO(V) typ. | C(pF) typ. | ESD(kV) min |
|-------------|-------------|------------|-------------|
| 500         | 8           | 3.5        | 8           |

Low capacity ESD surge absorber for 100 to 500 Mbps-class data line ESD noise protection.

Tapping direction



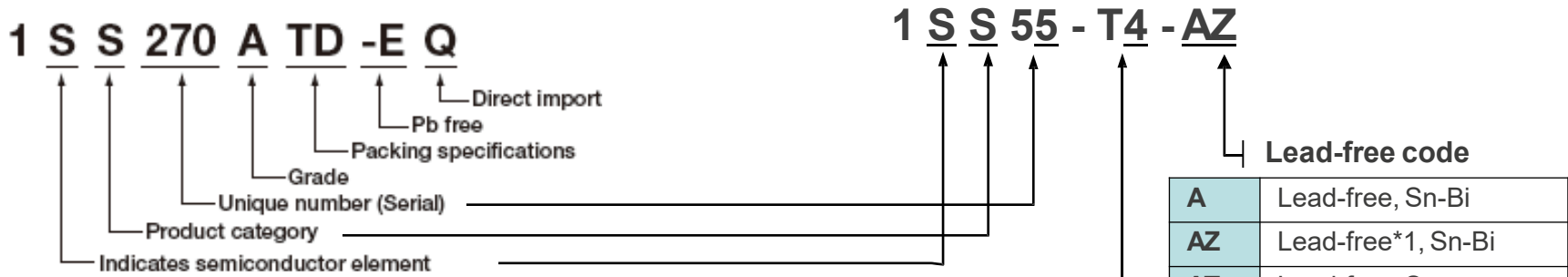
|   |  |                 |
|---|--|-----------------|
| F | 3pin MM<br><br>(2.9×2.8×1.4)  | 200mW Dual type |
| S | 3pin SSP<br><br>(2.0×2.1×0.9) | 150mW Dual type |
| H | 5pin SSP<br><br>(2.0×2.1×0.9) | 200mW Quad type |

## Renesas NSAD Series Surge Absorber Diodes

Ex: NSAD 500S is Dual type Surge Absorber Diode in 3pin SSP package.

# 1SS270ATD-EQ / 1SS55-T4-AZ

● Glass (Inserting ) Type [JEITA]



Product category

|   |                     |
|---|---------------------|
| R | Rectification diode |
| S | Signal diode        |
| V | Varicap/PIN diode   |
| Z | Zener diode         |

Lead-free code

|    |                       |
|----|-----------------------|
| A  | Lead-free, Sn-Bi      |
| AZ | Lead-free*1, Sn-Bi    |
| AT | Lead-free, Sn         |
| AY | Lead-free*1, Matte-Sn |

\*1: High-melting-point solder excepted in RoHS is contained internally.

Packing Specification

| T1                              | T2                              | T4                              |
|---------------------------------|---------------------------------|---------------------------------|
| Ammo pack<br>Box (2000 pcs/box) | Ammo pack<br>Reel (5000pcs/box) | Ammo pack<br>Box (5000 pcs/box) |

Abbreviation indicating application

|   |               |
|---|---------------|
| S | For signal    |
| V | Varicap/PIN   |
| R | For rectifier |
| Z | Zener         |
| C | Chip, Wafer   |

Package abbreviation

|   |             |   |                                    |
|---|-------------|---|------------------------------------|
| B | CMPAK, MOP  | N | VSON-5                             |
| C | UFP         | P | Do-41*                             |
| D | SFP         | R | SRP                                |
| G | Do-35*      | S | MHD*                               |
| K | LLD         | T | (Temp. compensation zener) use UFP |
| L | EFP         | U | UFP                                |
| M | MPAK, MPAK5 | W | MPAK for rectifier                 |

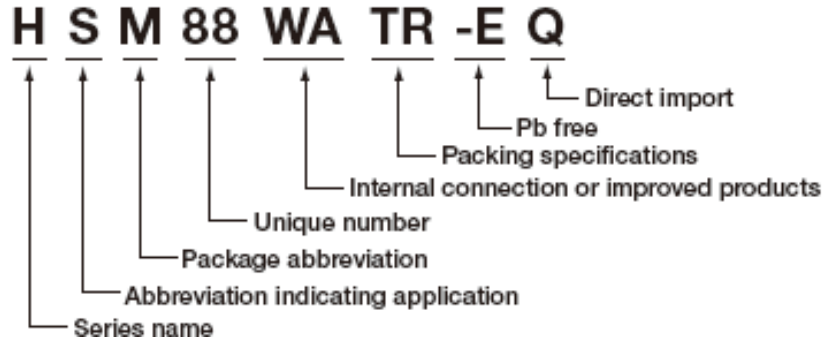
Other :  
T6 Reel 2500/reel  
T7 Box 2500/box T8  
Box 5000/box

\*: Glass (inserting) type.

# HSM88WATR-EQ

● Surface-mount Type

With Some Exceptions



Abbreviation indicating application

|   |               |
|---|---------------|
| S | For signal    |
| V | Varicap/PIN   |
| R | For rectifier |
| Z | Zener         |
| C | Chip, Wafer   |

Package abbreviation

|   |             |   |                                    |
|---|-------------|---|------------------------------------|
| B | CMPAK, MOP  | N | VSON-5                             |
| C | UFP         | P | Do-41*                             |
| D | SFP         | R | SRP                                |
| G | Do-35*      | S | MHD*                               |
| K | LLD         | T | (Temp. compensation zener) use LFP |
| L | EFP         | U | LFP                                |
| M | MPAK, MPAK5 | W | MPAK for rectifier                 |

\*: Glass (inserting) type.

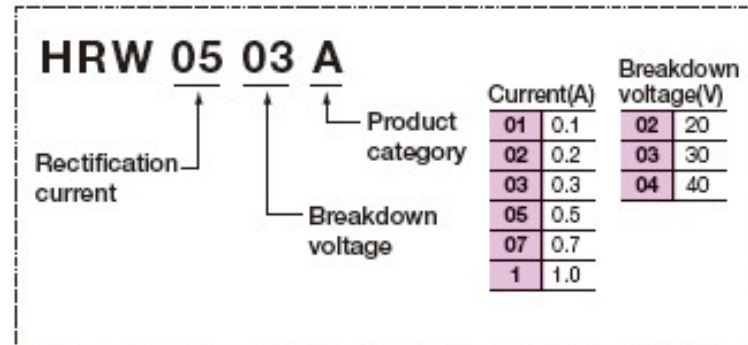
Unique number

|                         |                                     |
|-------------------------|-------------------------------------|
| 300 to 499              | Varicap                             |
| 10 to 229               | Varicap/PIN                         |
| Vz center value integer | Zener                               |
| 0103 to 0703            | Rectification schottky (*See table) |

Packing specifications

Please refer to Web-site concern to Diode

Rectification schottky (\*See table)

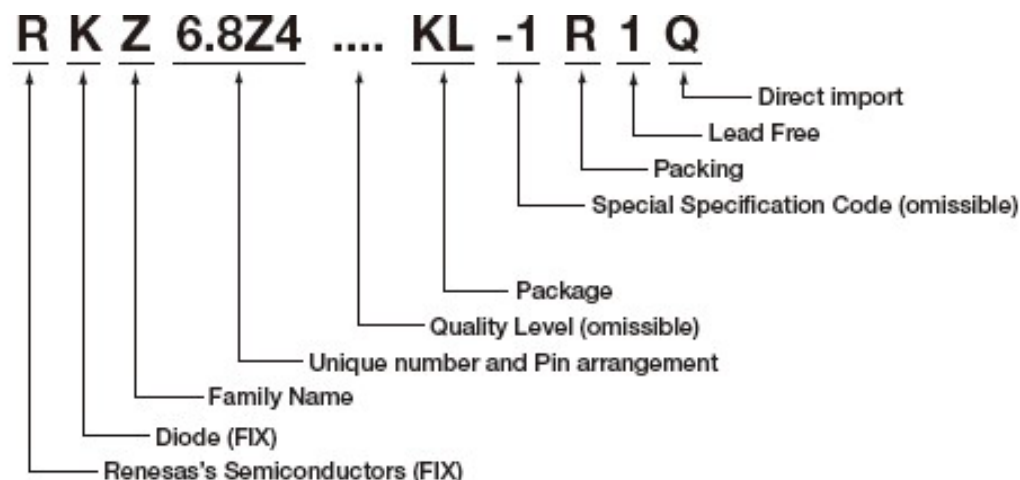


Internal connection

|    |                         |
|----|-------------------------|
| S  | Series                  |
| SR | Reverse series          |
| WK | Cathode common          |
| WA | Anode common            |
| WS | 2 series connections    |
| FA | 4 elements anode common |
| YP | 2 elements parallel     |

Packing information: go to p24

# RKZ6.8Z4.....KL-1R1Q



With Some Exceptions

Packing Resin Mold

|     |    |   |
|-----|----|---|
| 4mm | TR | P |
|     | TL | H |
|     | UR | Q |
|     | UL | J |
| 2mm | KR | R |
|     | KL | K |
|     | PR | S |
|     | PL | L |

Glass

|        |       |   |
|--------|-------|---|
| 52mm   | Bulk  | 0 |
|        | TG    | A |
|        | TA    | 7 |
| 26mm   | TK    | 7 |
|        | TE    | 8 |
|        | TJ    | 8 |
|        | TD    | 9 |
|        | TN    | 9 |
| Radial | TDX   | B |
|        | RE/RX | 6 |
|        | RF/RX | 5 |

Family Name and Unique number

|       |                |  |            |
|-------|----------------|--|------------|
| V     | Vari-Cap       | Tuner  | 500 to 599 |
|       |                | VOO  | 600 to 699 |
| P     | PIN Diodes     | Anit.Sw  | 200 to 299 |
|       |                | Attenuator   | 300 to 399 |
| S     | Switching      | Switching  | 100 to 149 |
|       |                | RF Switch  | 150 to 199 |
| D     | Schottky       |  | 700 to 799 |
| R     | Rect.Schottky  | Depend on Io,VR(*1)  |            |
| Z     | Zener          | Depend on Vz,Cd(*)<br>(*) 4pF : Z4<br>Low Cd(8 to 25pF): Z<br>others: none |            |
| Q(*2) | Compound Chips | more than 6pin   | 400 to 499 |

(\*1)Refer to the another Table (Rectification schottky) (\*2)Depend on Family

Pin Arrangement

|    |                     |
|----|---------------------|
| S  | Series Connect      |
| SR | Rev.Series.Connect  |
| WK | Cathode Common      |
| WA | Anode Common        |
| WS | Series Connect (x2) |
| FA | Anode Common (x4)   |
| FK | Cathode Common (x4) |
| YP | Parallel (x2)       |

Quality Level

|               |       |
|---------------|-------|
| J             | Q1A/B |
| (omissible;D) | Q2    |
| A             | Q3    |

Package

|    |       |    |         |
|----|-------|----|---------|
| KA | DO-35 | KP | MP6     |
| KB | DO-41 | KQ | (0402)  |
| KC | MHD   | KR | MOP     |
| KD | LLD   | KS | MFP12   |
| KE | MAP   | KT | VSON-5  |
| KF | SRP   | QA | MPAK    |
| KG | URP   | QC | MPAK5   |
| KH | TURP  | QE | CMPAK   |
| KJ | UFP   | QF | CMPAK4  |
| KK | SFP   | QK | MMPAK   |
| KL | EFP   | WA | Wafer-1 |
| KM | TEFP  | WB | Wafer-2 |
| KN | MP6   | WC | Wafer-3 |

Lead Free

|                  |   |            |
|------------------|---|------------|
| Full Pb Free     | 0 | without Bi |
| Full Pb Free     | 1 | with Bi    |
| Terminal Pb Free | 2 | without Bi |
| Terminal Pb Free | 3 | with Bi    |
| Pb               | 4 | -          |

|    |         |
|----|---------|
| WD | Wafer-4 |
| WE | Wafer-5 |
| WF | Wafer-6 |
| WT | Chip-1  |
| WS | Chip-2  |
| WR | Chip-3  |

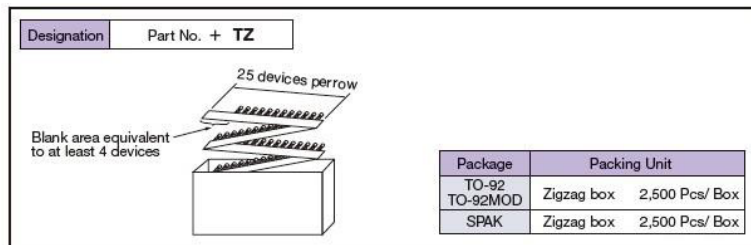
Packing information: go to p24

# HZ/RKZ/1S Packing abbreviation

## ■ Emboss Taping Reel Pack

| Package                                      | Packing Unit        | Name                 | Packing Configurations   |
|--|---------------------|----------------------|--|
| URP  | 3,000               | Part No.+TL[H]/TR[P] | Emboss TAPING REEL PACK<br>(Conforming to JEITA standard RC-1009B)<br>8mm emboss tape<br>(Tape equivalent to JEITA type TE84F) |
| MPAK<br>VSON-3<br>VSON-4<br>CMPAK<br>CMPAK-4 | 3,000               | Part No.+TL[H]/TR[P] |  |
| MPAK-5<br>VSON-5                             | 3,000               | Part No.+TL[H]/TR[P] |  |
| UFP<br>(TURP)<br>TURP-FM                     | 4mm pitch<br>4,000  | Part No.+TR(TRF)[P]  |  |
|  | 2mm pitch<br>8,000  | Part No.+KR(KRF)[R]  |  |
| SFP  | 2mm pitch<br>8,000  | Part No.+KR[R]       |  |
| EFP<br>MP6                                   | 2mm pitch<br>10,000 | Part No.+KR[R]       |  |
| SRP-F  | 3,000               | Part No.+[P]         |  |

Note) TR is recommended for emboss taping and reel specification.  
Characters in [ ] in Name column are new codes.



## ■ Taping Pulling Direction

| Package  | Taping Code                         | Appearance                 |
|--|-------------------------------------|----------------------------|
| URP<br>SRP-F   | TR[P]<br>(Taping to Right)          | TR Pulling direction →<br> |
| UFP<br>(TURP)<br>TURP-FM<br>URP-F                      | TR[P]<br>(Taping to Right)<br>(TRF) | TR Pulling direction →<br> |
|  | KR[R]<br>(KRF)                      | KR Pulling direction →<br> |
| SFP<br>EFP<br>MP6                                      | KR[R]                               | KR Pulling direction →<br> |
| MPAK<br>CMPAK<br>CMPAK-4<br>VSON-3<br>VSON-4<br>VSON-5 | TR[P]<br>(Taping to Right)          | TR Pulling direction →<br> |

Characters in [ ] in Taping Code column are new codes.

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[Renesas.com](https://www.renesas.com)