To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

SILICON POWER TRANSISTOR

Phase-out/Discontinued

2SC2517

NPN SILICON EPITAXIAL TRANSISTOR FOR HIGH-SPEED SWITCHING

The 2SC2517 is a mold power transistor developed for high-speed switching. This transistor is ideal for use in drivers such as switching regulators, DC/DC converters, high-frequency power amplifiers.

FEATURES

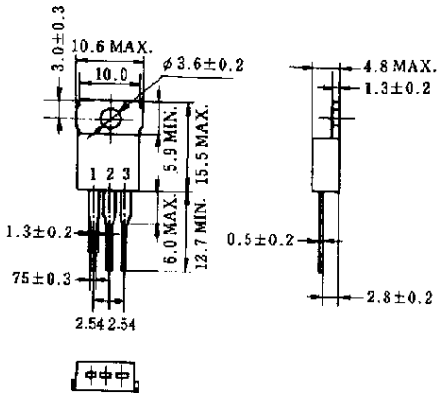
- Low collector saturation voltage:
  $V_{CE(sat)} \leq 0.6$ V (at $I_C = 3.0$ A)
- Fast switching speed:
  $t_f \leq 0.5$ μs (at $I_C = 3.0$ A)
- Wide base reverse-bias SOA:
  $V_{CEX(SUS)} \leq 150$ V (at $I_C = 3.0$ A)

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	150	V
Collector to emitter voltage	V_{CEO}	100	V
Emitter to base voltage	V_{EBO}	12	V
Collector current (DC)	$I_{C(DC)}$	5.0	A
Collector current (pulse)	$I_{C(pulse)}$*	10	A
Base current (DC)	$I_{B(DC)}$	2.5	A
Total power dissipation	P_T (Tc = 25°C)	30	W
Total power dissipation	P_T (Ta = 25°C)	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

* PW ≤ 300 μs, duty cycle ≤ 10%

PACKAGE DRAWING (UNIT: mm)



Electrode Connection
1. Base (B)
2. Collector (C)
3. Emitter (E)
4. Fin (collector)

EIAJ: SC-46
JEDEC: TO-220AB
IEC: —

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

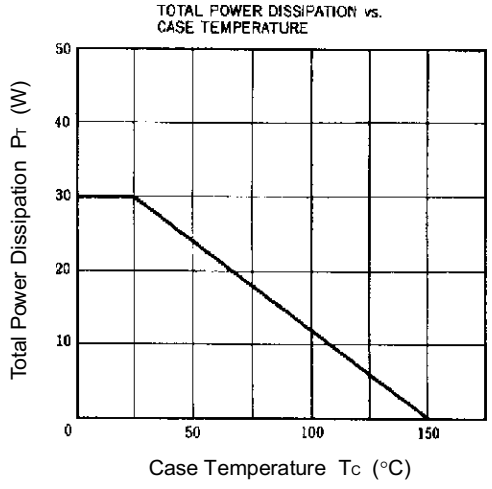
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	$V_{CEO(SUS)}$	I_C = 3.0 A, I_{B1} = 0.3 A, L = 1 mH	100			V
Collector to emitter voltage	$V_{CEX(SUS)1}$	I_C = 3.0 A, I_{B1} = $-I_{B2}$ = 0.3 A, $V_{BE(OFF)}$ = –5.0 V, L = 180 μH, clamped	150			V
Collector to emitter voltage	$V_{CEX(SUS)2}$	I_C = 6.0 A, I_{B1} = 1.2 A, I_{B2} = –0.3 A, $V_{BE(OFF)}$ = –5.0 V, L = 180 μH, clamped	100			V
Collector cutoff current	I_{CBO}	V_{CB} = 100 V, I_E = 0			10	μA
Collector cutoff current	I_{CER}	V_{CE} = 100 V, R_{BE} = 51 Ω, Ta = 125°C			1.0	mA
Collector cutoff current	I_{CEX1}	V_{CE} = 100 V, $V_{BE(OFF)}$ = –1.5 V			10	μA
Collector cutoff current	I_{CEX2}	V_{CE} = 100 V, $V_{BE(OFF)}$ = –1.5 V, Ta = 125°C			1.0	mA
Emitter cutoff current	I_{EBO}	V_{EB} = 10 V, I_C = 0			10	μA
DC current gain	h_{FE1}	V_{CE} = 5.0 V, I_C = 0.2 A*	40			
DC current gain	h_{FE2}	V_{CE} = 5.0 V, I_C = 2.0 A*	40		200	
Collector saturation voltage	$V_{CE(sat)}$	I_C = 3.0 A, I_B = 0.3 A*			0.6	V
Base saturation voltage	$V_{BE(sat)}$	I_C = 3.0 A, I_B = 0.3 A*			1.5	V
Turn-on time	t_{on}	I_C = 3.0 A, R_L = 17 Ω, I_{B1} = $-I_{B2}$ = 0.3 A, V_{CC} ≅ 50 V Refer to the test circuit.			0.5	μs
Storage time	t_{stg}				2.5	μs
Fall time	t_f				0.5	μs

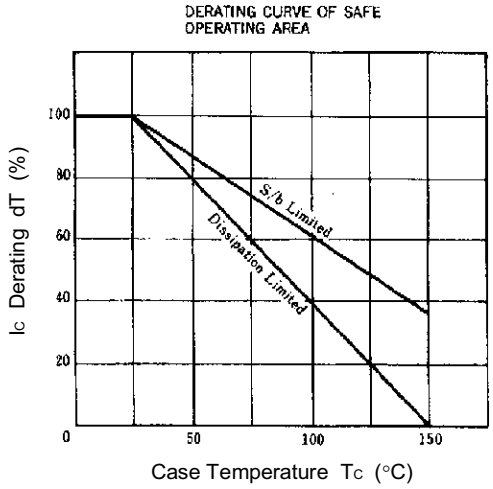
* Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

h_{FE2} CLASSIFICATION

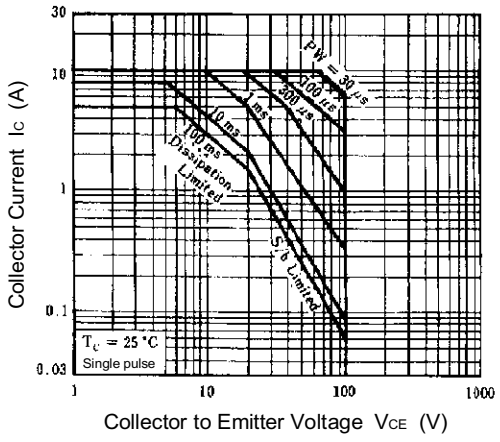
Marking	M	L	K
h_{FE2}	40 to 80	60 to 120	100 to 200

TYPICAL CHARACTERISTICS (Ta = 25°C)

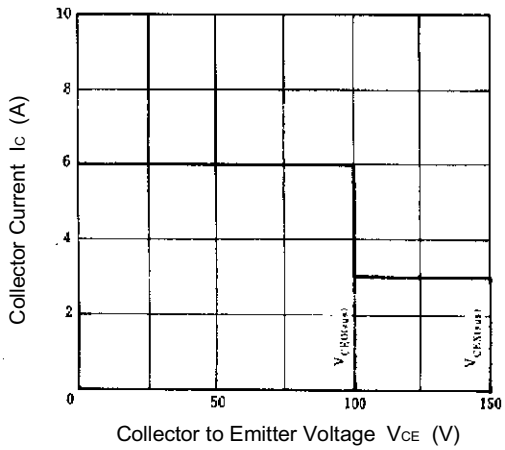




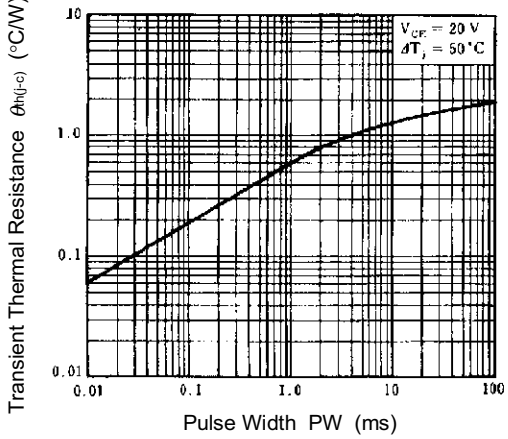
SAFE OPERATING AREA



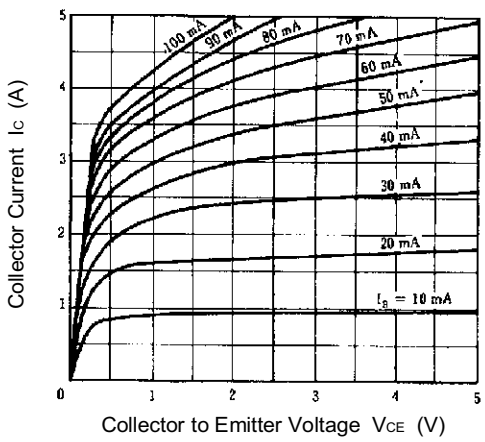
REVERSE BIAS SAFE OPERATING AREA



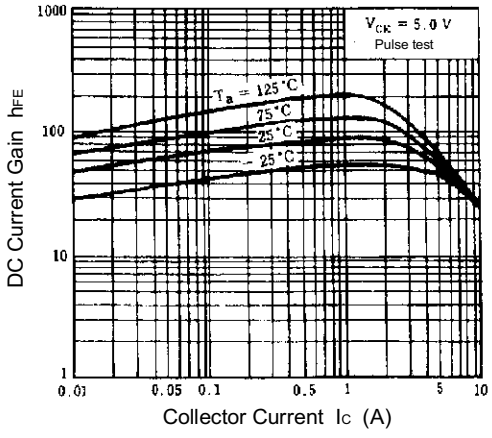
TRANSIENT THERMAL RESISTANCE



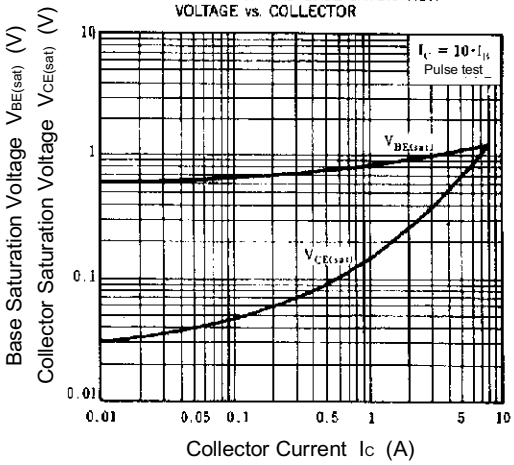
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



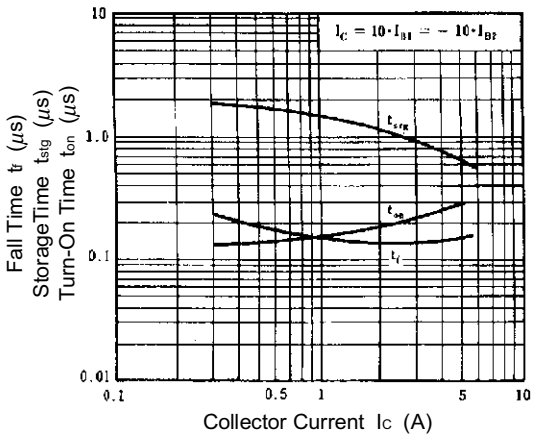
DC CURRENT GAIN vs. COLLECTOR CURRENT



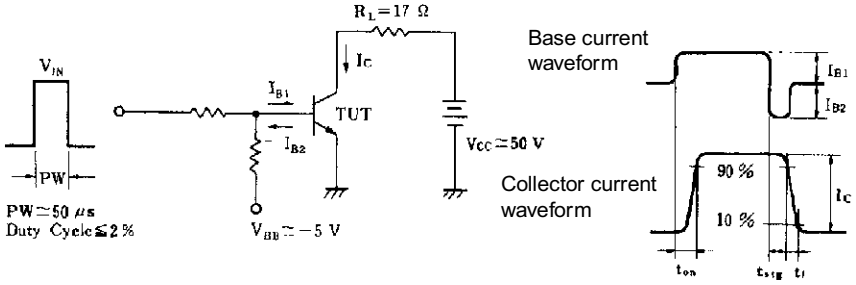
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR



TURN ON TIME, STORAGE TIME AND FALL TIME
vs. COLLECTOR CURRENT



SWITCHING TIME (t_{on}, t_{stg}, t_f) TEST CIRCUIT



[MEMO]

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