

2SK2857C

R07DS1261EJ0200

Rev.2.00

Jun 11, 2015

N-CHANNEL MOSFET FOR SWITCHING

Description

The 2SK2857C, N-channel vertical type MOSFET designed for general-purpose switch, is a device which can be driven directly by a 4.0 V power source.

Features

- Directly driven by a 4.0 V power source.
- Low on-state resistance
 - $R_{DS(on)1} = 105 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 2.0 \text{ A)}$
 - $R_{DS(on)2} = 150 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.0 \text{ V, } I_D = 2.0 \text{ A)}$

Ordering Information

Part Number	Lead Plating	Packing	Package
2SK2857C-T1-AZ/AY	-AZ : Sn-Bi , -AY : Pure Sn	1000p/Reel	SC-62 (3p PoMM)

Remark "-AZ/AY" indicates Pb-free. This product does not contain Pb in external electrode and other parts.

Marking XB

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	60	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 20	V
Drain Current (DC)	$I_{D(DC)}$	± 4.0	A
Drain Current (pulse) ^{Note1}	$I_{D(pulse)}$	± 16	A
Total Power Dissipation ^{Note2}	P_T	2.0	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note1 $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1\%$

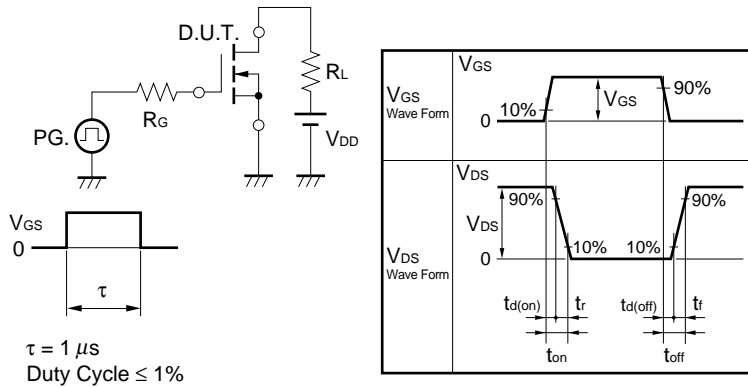
Note2 $16 \text{ cm}^2 \times 0.7\text{mm}$, ceramic substrate used

Electrical Characteristics (T_A = 25°C)

Characteristics	Symbol	Test Conditions	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			10	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±18 V, V _{DS} = 0 V			±10	μA
Gate to Source Cut-off Voltage	V _{GS(off)}	V _{DS} = 10V, I _D = 1 mA	1.5	2.0	2.5	V
Forward Transfer Admittance Note	y _{fs}	V _{DS} = 10 V, I _D = 2.0 A	2.0			S
Drain to Source On-state Resistance Note	R _{DS(on)1}	V _{GS} = 10 V, I _D = 2.0 A		85	105	mΩ
	R _{DS(on)2}	V _{GS} = 4.0 V, I _D = 2.0 A		106	150	mΩ
Input Capacitance	C _{iss}	V _{DS} = 10 V,		260		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V,		65		pF
Reverse Transfer Capacitance	C _{rss}	f = 1.0 MHz		20		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = 30 V,		14		ns
Rise Time	t _r	I _D = 2 A,		5		ns
Turn-off Delay Time	t _{d(off)}	V _{GS} = 10 V,		80		ns
Fall Time	t _f	R _G = 10 Ω		30		ns
Total Gate Charge	Q _G	I _D = 4.0 A, V _{DD} = 48 V, V _{GS} = 10 V		6		nC
Body Diode Forward Voltage Note	V _{F(S-D)}	I _F = 4.0 A, V _{GS} = 0 V		0.9		V

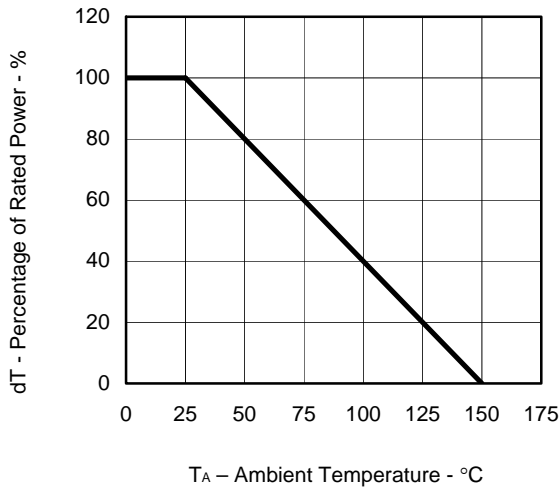
Note Pulsed

Test Circuit Switching Time

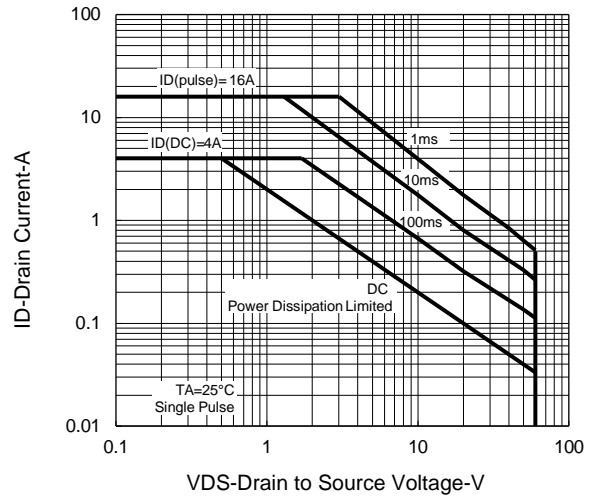


Typical Characteristics (T_A = 25°C)

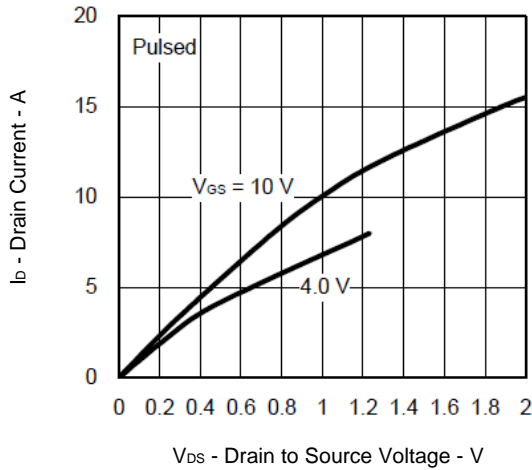
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



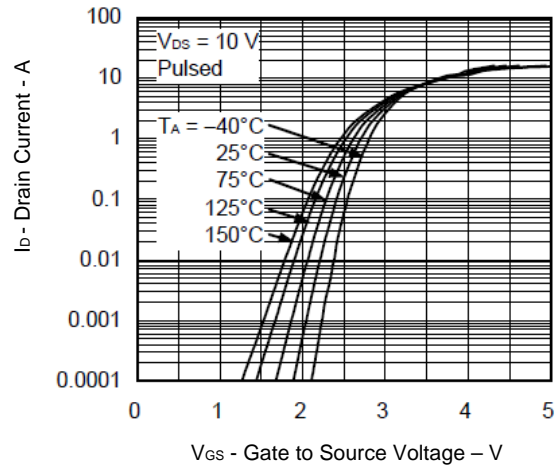
FORWARD BIAS SAFE OPERATING AREA



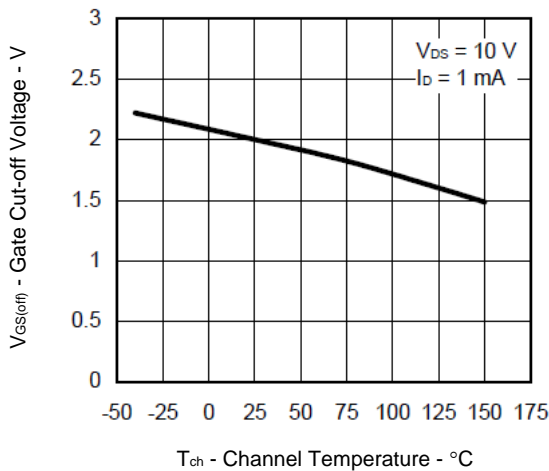
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



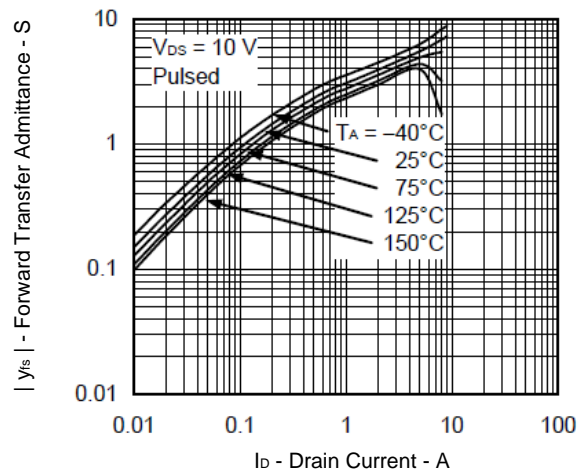
FORWARD TRANSFER CHARACTERISTICS



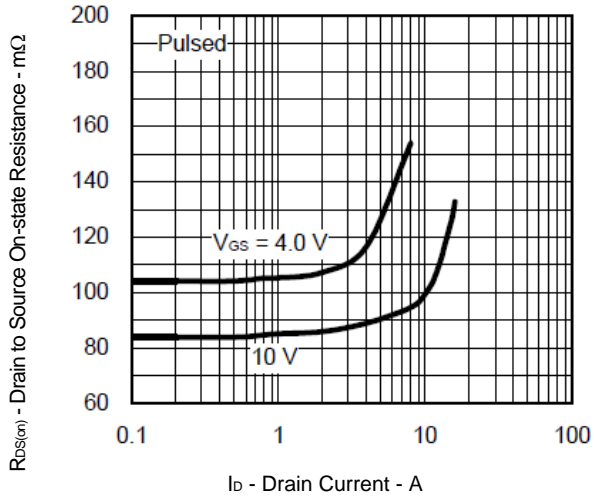
GATE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



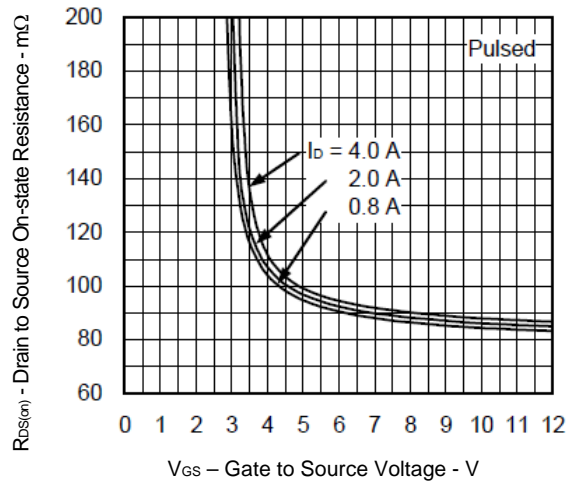
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



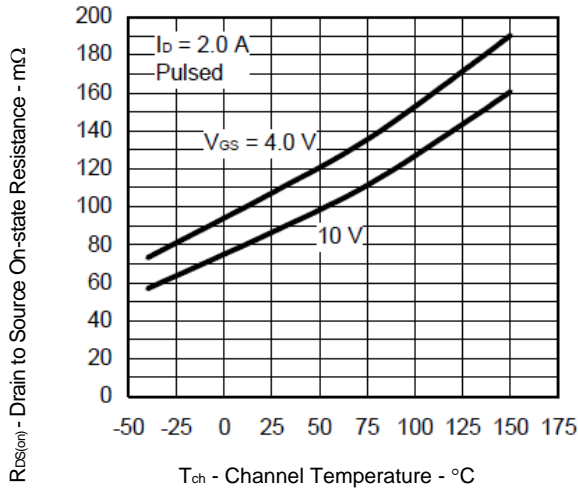
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



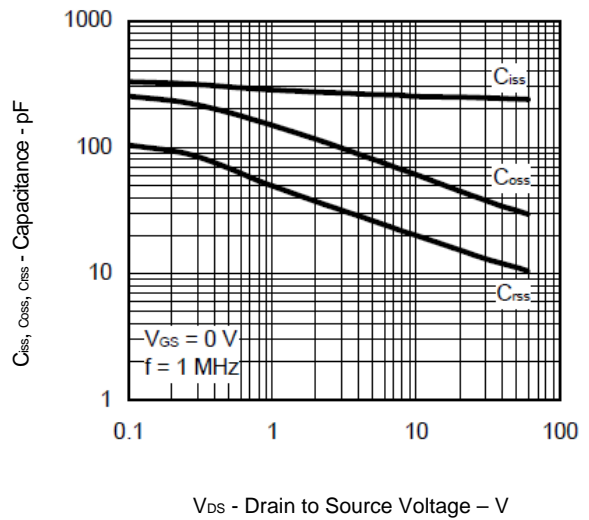
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



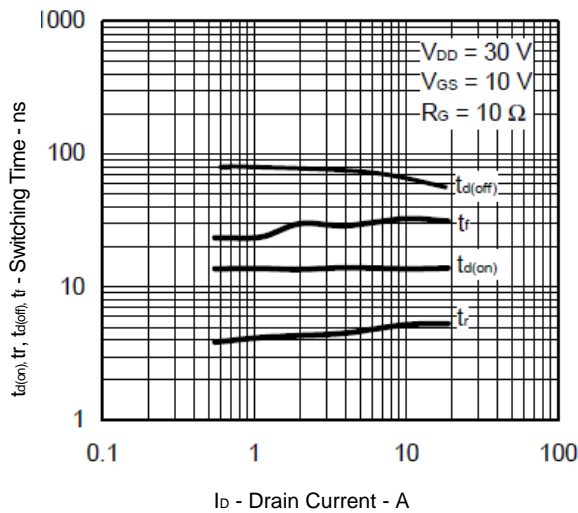
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



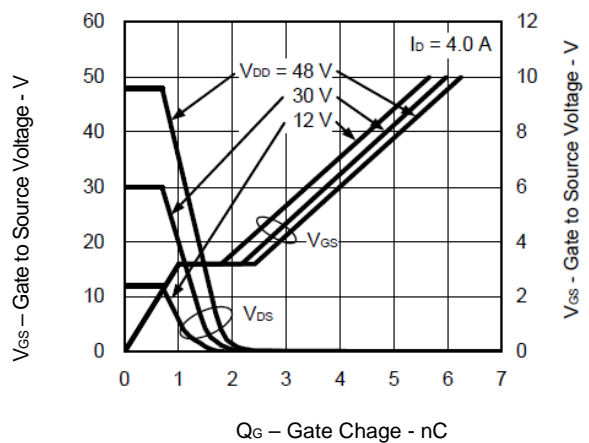
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE

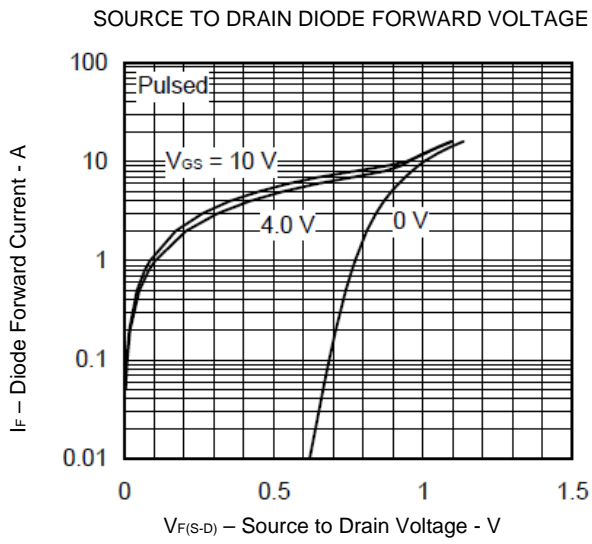


SWITCHING CHARACTERISTICS



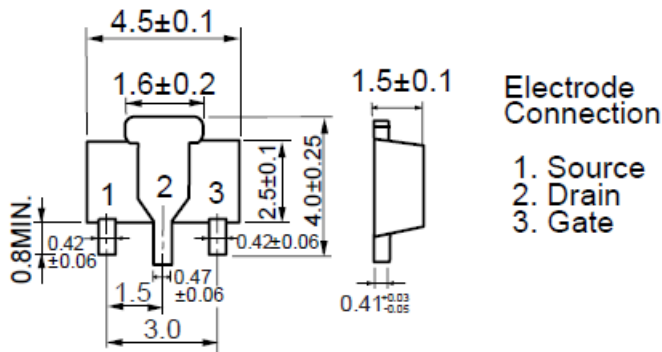
DYNAMIC INPUT CHARACTERISTICS



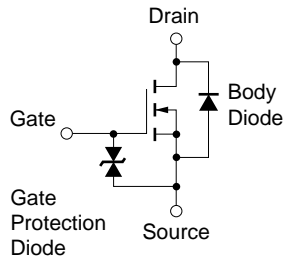


Package Drawings (Unit: mm)

SC-62 (3pPoMM)



Equivalent Circuit



Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

	2SK2857C
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Rev.	Date	Description	
		Page	Summary
1.00	Sep , 2013	-	First Edition Issued
2.00	Jun, 2015	3	Added FORWARD BIAS SAFE OPERATING AREA

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