2SK2857C

N-CHANNEL MOSFET FOR SWITCHING

R07DS1261EJ0200
Rev.2.00
Jun 11, 2015

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 m Ω MAX. (V_{GS} = 10 V, I_D = 2.0 A)
  $R_{DS(on)2}$ = 150 mΩ MAX. (V_{GS} = 4.0 V, I_D = 2.0 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°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	60	V
Gate to Source Voltage (V_{DS} = 0 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	°C
Storage Temperature	T_{stg}	–55 to +150	°C

Note1 PW ≤ 10 μs, Duty Cycle ≤ 1%

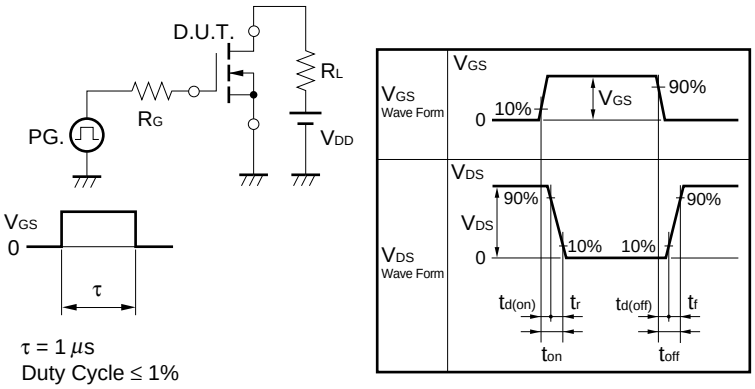
Note2 16 cm^2 X 0.7mm, ceramic substrate used

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

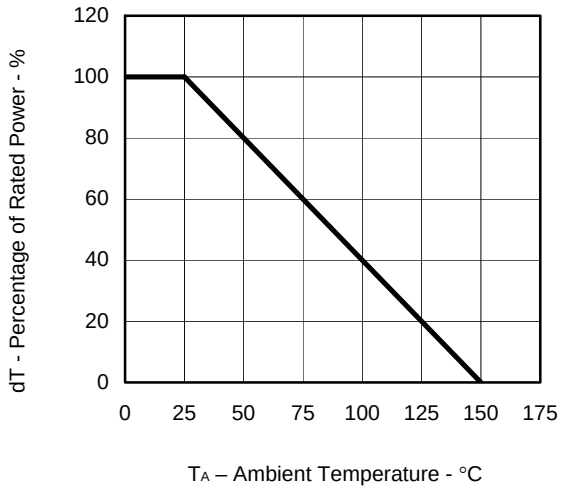
Test Circuit Switching Time



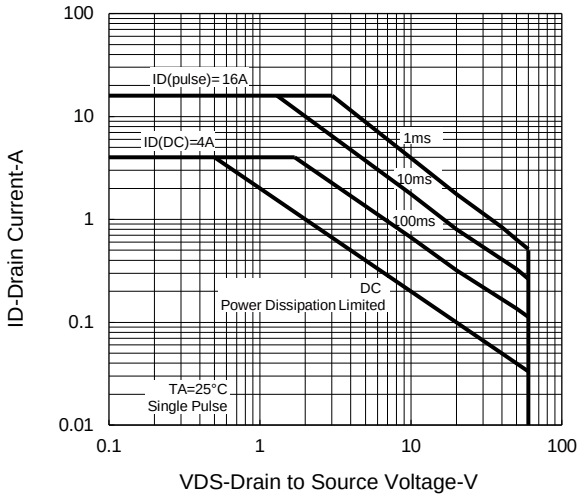
τ = 1 μs
Duty Cycle ≤ 1%

Typical Characteristics (T_A = 25°C)

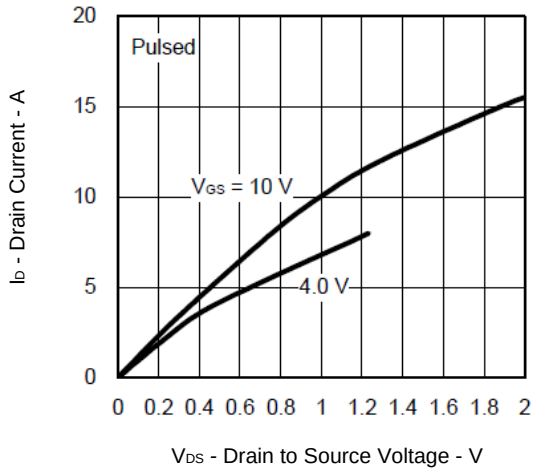
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



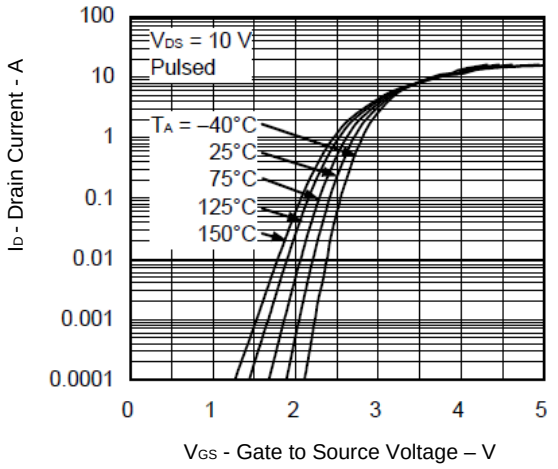
FORWARD BIAS SAFE OPERATING AREA



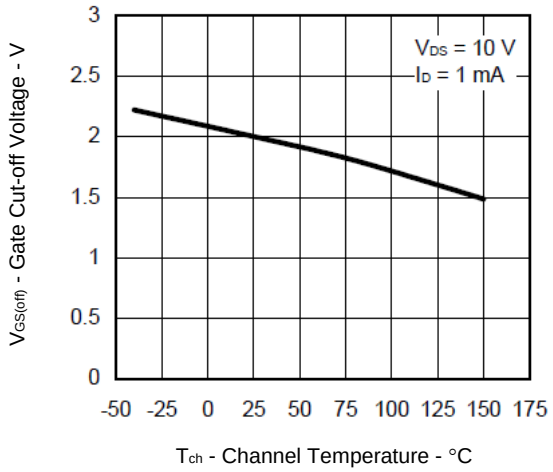
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



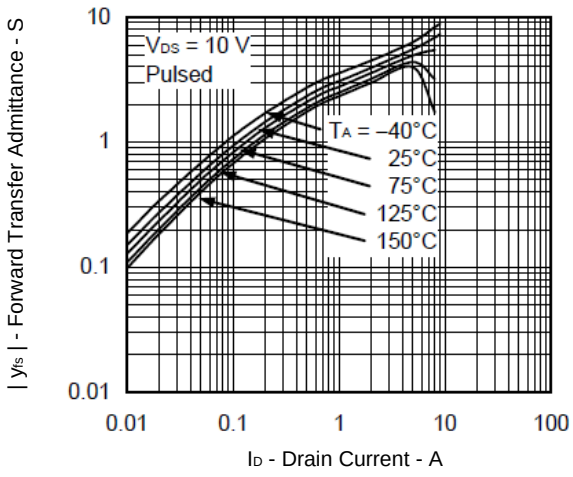
FORWARD TRANSFER CHARACTERISTICS



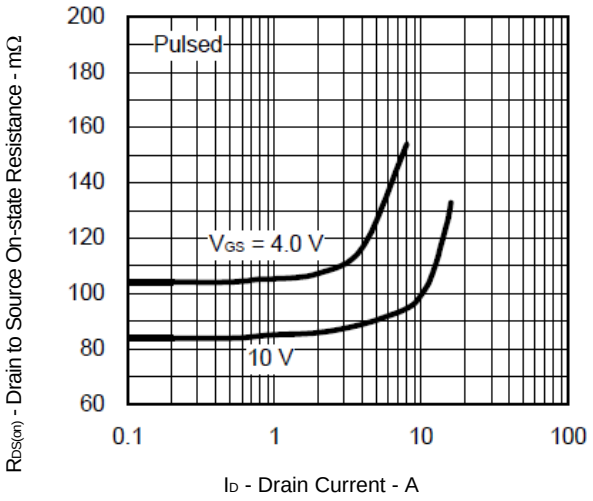
GATE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



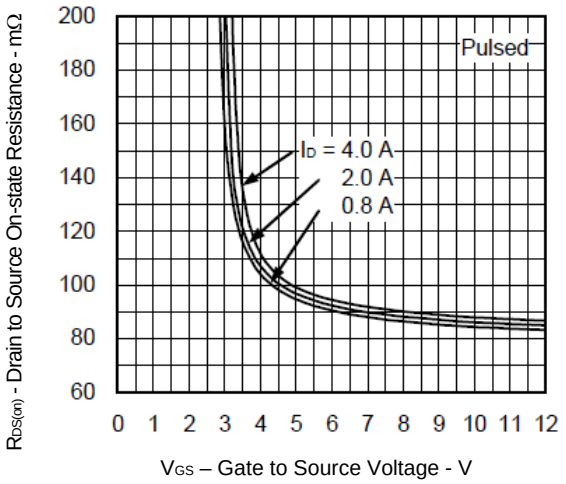
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



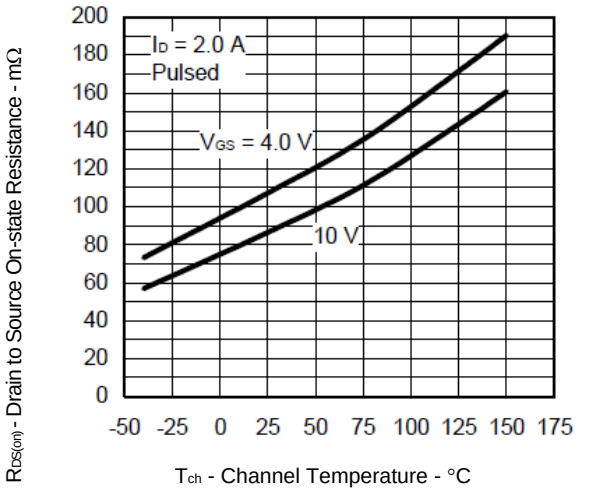
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENT



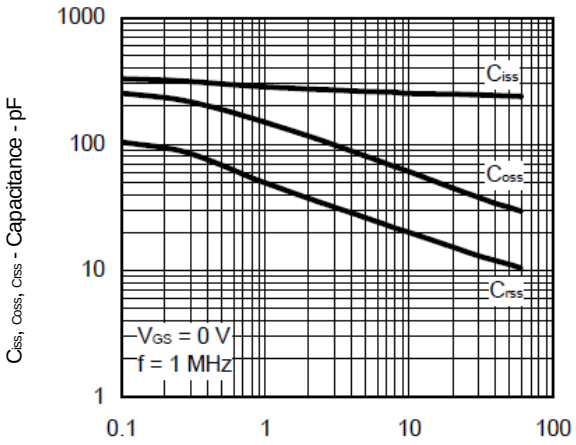
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE



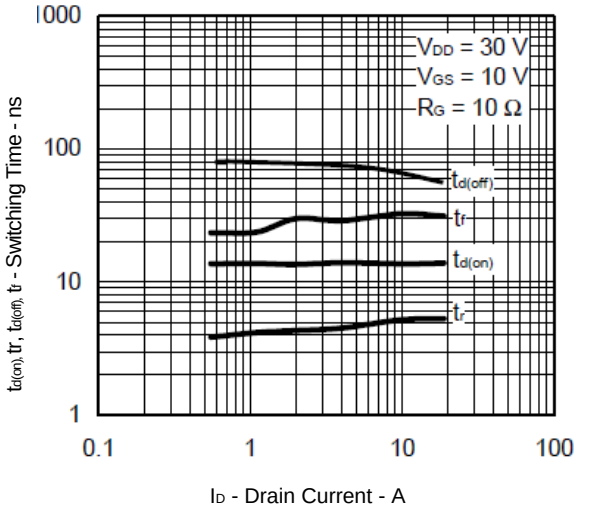
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
CHANNEL TEMPERATURE



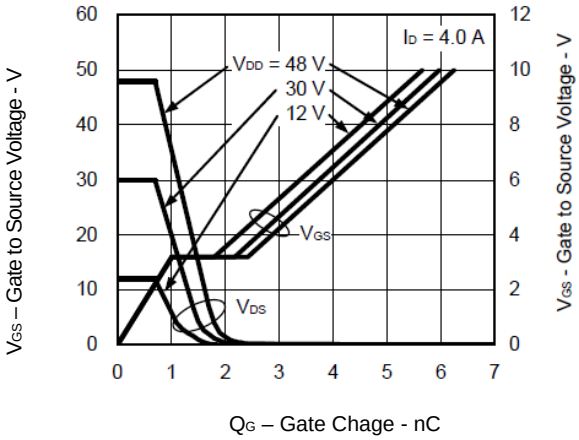
CAPACITANCE vs.
DRAIN TO SOURCE VOLTAGE



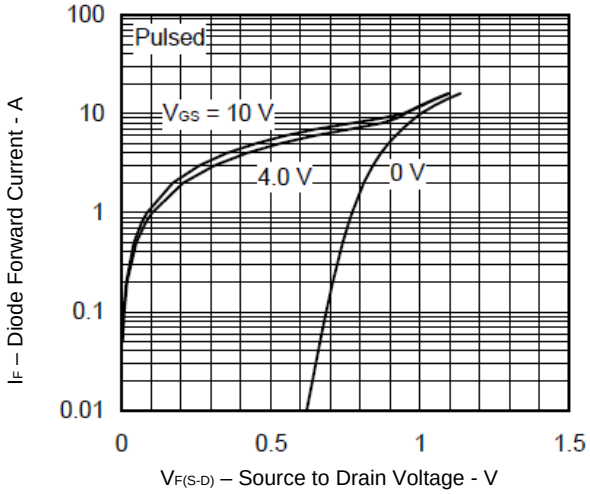
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS

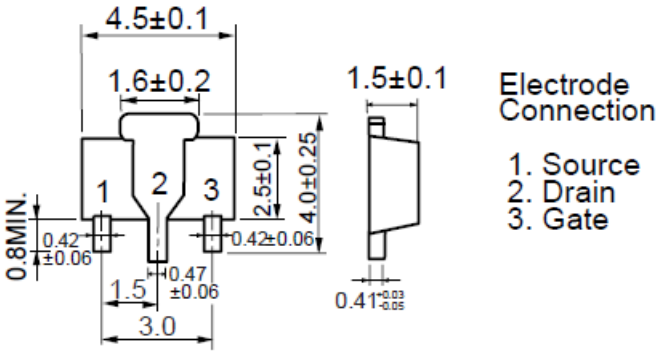


SOURCE TO DRAIN DIODE FORWARD VOLTAGE

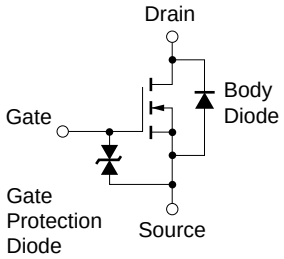


Package Drawings (Unit: mm)

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.

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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