

DESCRIPTION

SMC2869ESD6 is the dual N-Channel trench MOSFET are well suited for high efficiency fast switching applications, this MOSFET provide superior fast switching performance, this devices are well suited for applications in the small surface mount package.

PART NUMBER INFORMATION

SMC **2869** **E** **SD6** - **TR** **G**
 a b c d e f

a : Company name
 b : Product Serial number
 c : ESD Protection
 d : Package code SD6: SOT-363
 e : Handling code TR: Tape&Reel
 f : Green produce code G: RoHS Compliant

FEATURES

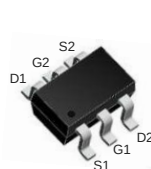
$V_{DS}=-20V$, $I_D=0.52A$

$R_{DS(ON)}=560m\Omega(Typ.)@V_{GS}=-4.5V$
 $R_{DS(ON)}=740m\Omega(Typ.)@V_{GS}=-2.5V$
 $R_{DS(ON)}=1000m\Omega(Typ.)@V_{GS}=-1.8V$
 $R_{DS(ON)}=1400m\Omega(Typ.)@V_{GS}=-1.5V$

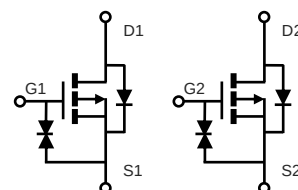
- ◆ High-speed switching, Low On-resistance
- ◆ 1.5V Low gate drive
- ◆ ESD protected

APPLICATIONS

- ◆ Load switch application for portable
- ◆ DC/DC converter



SOT-363



ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$ Unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	± 10	V
I_D	Continuous Drain Current	$T_A=25^{\circ}C$	-0.5
		$T_A=70^{\circ}C$	-0.4
I_{DM}	Pulsed Drain Current ^a	-1.8	A
P_D	Power Dissipation ^a	$T_A=25^{\circ}C$	0.28
		$T_A=70^{\circ}C$	0.18
T_J	Operation Junction Temperature	-55/150	$^{\circ}C$
T_{STG}	Storage Temperature Range	-55/150	$^{\circ}C$

THERMAL RESISTANCE

Symbol	Parameter	Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient ^A	$t \leq 10s$	-	$^{\circ}C/W$
	Thermal Resistance Junction to Ambient ^{AC}	Steady-State	450	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ Unless otherwise noted)

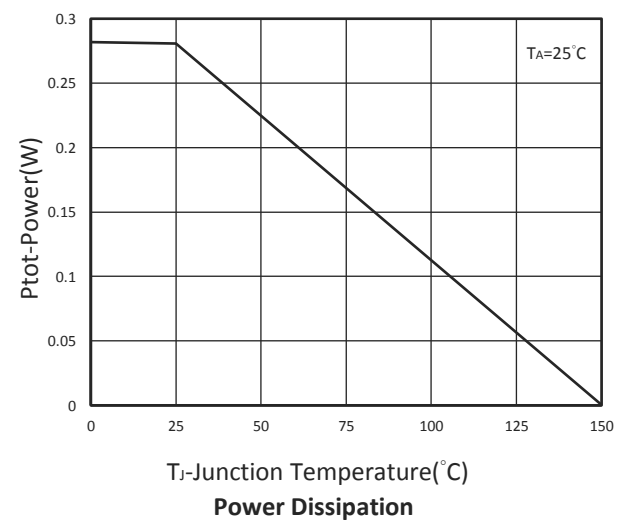
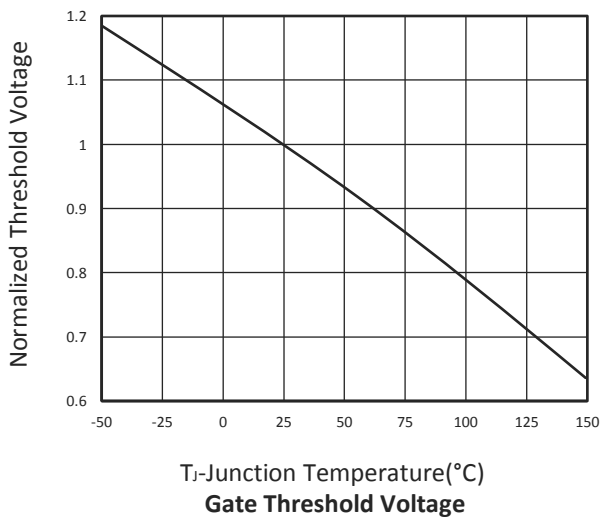
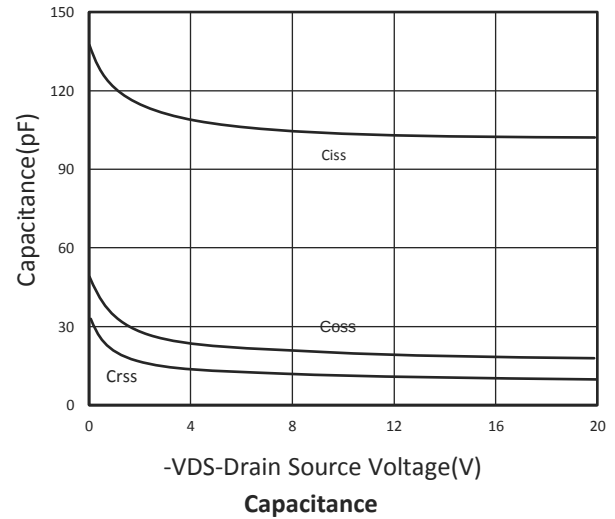
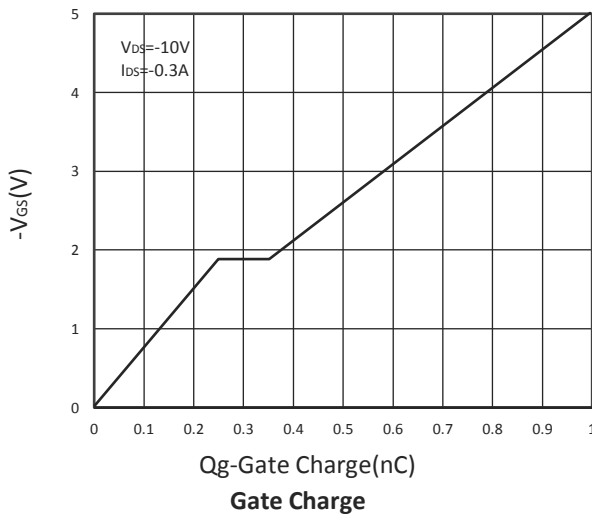
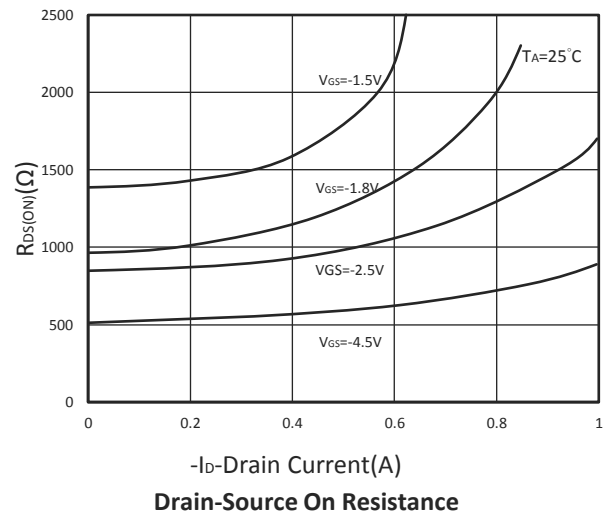
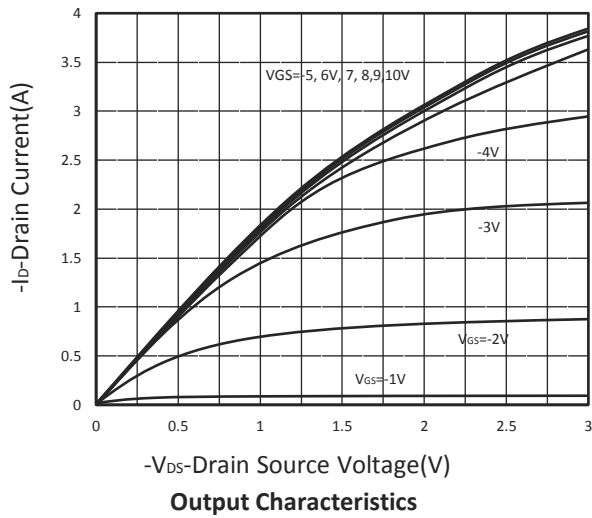
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.5	-0.7	-1	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±8V			±10	μA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V, T _J =25°C			1	μA
		V _{DS} =-12V, V _{GS} =0V, T _J =85°C			-10	
R _{DS(ON)}	Drain-source On-Resistance [Ⓟ]	V _{GS} =-4.5V, I _D =-0.5A V _{GS} =-2.5V, I _D =-0.3A V _{GS} =-1.8V, I _D =-0.2A V _{GS} =-1.5V, I _D =-0.1A		600 800 1000 1400	750 950 1300 1800	mΩ
Diode Characteristics						
V _{SD}	Diode Forward Voltage [Ⓟ]	I _S =-0.2A, V _{GS} =0V			-1	V
I _S	Diode Continuous Forward Current				-0.5	A
Dynamic and Switching Parameters ^F						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V I _D =-0.3A		1		nC
Q _{gs}	Gate-Source Charge			0.24		
Q _{gd}	Gate-Drain Charge			0.1		
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz		105		pF
C _{oss}	Output Capacitance			16		
C _{rss}	Reverse Transfer Capacitance			9.4		
t _{d(on)}	Turn-On Time	V _{DD} =-10V, V _{GS} =-4.5V R _G =4.5Ω, I _D =-0.3A		6.2		nS
t _r				19		
t _{d(off)}	Turn-Off Time			77		
t _f				231		

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

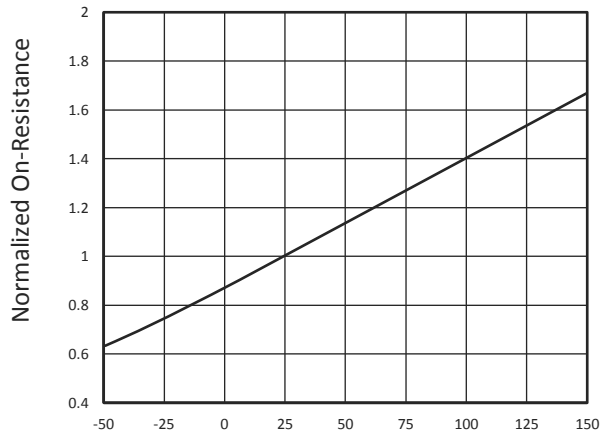
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, $T_{J(MAX)}=150^\circ\text{C}$ (initial temperature $T_J=25^\circ\text{C}$).
- C. Using $\leq 10\text{s}$ junction-to-ambient thermal resistance is base on $T_{J(MAX)}=150^\circ\text{C}$.
- D. Pulse test width $\leq 300\mu\text{s}$ and duty cycle $\leq 2\%$.
- E. Guaranteed by design, not subject to production testing.

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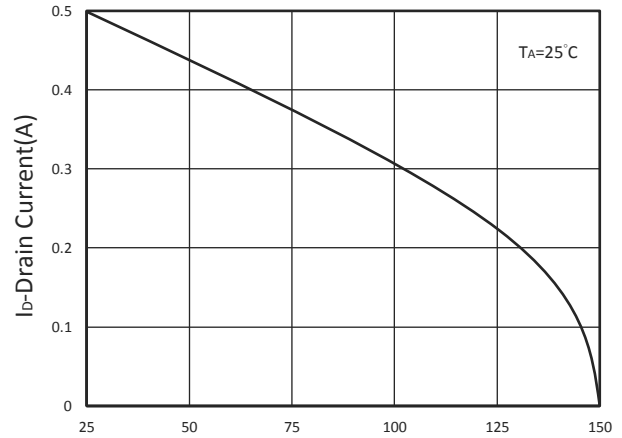
TYPICAL CHARACTERISTICS



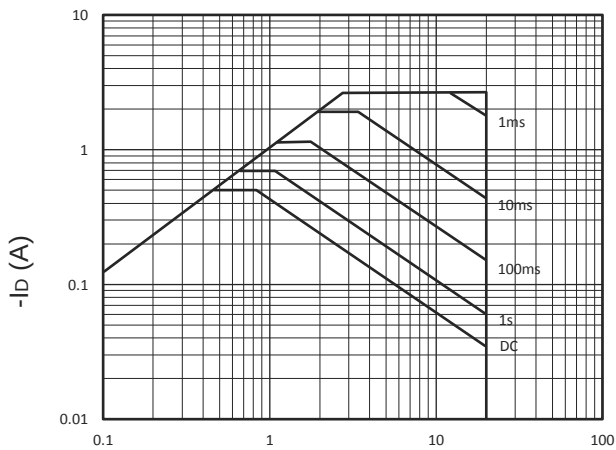
TYPICAL CHARACTERISTICS



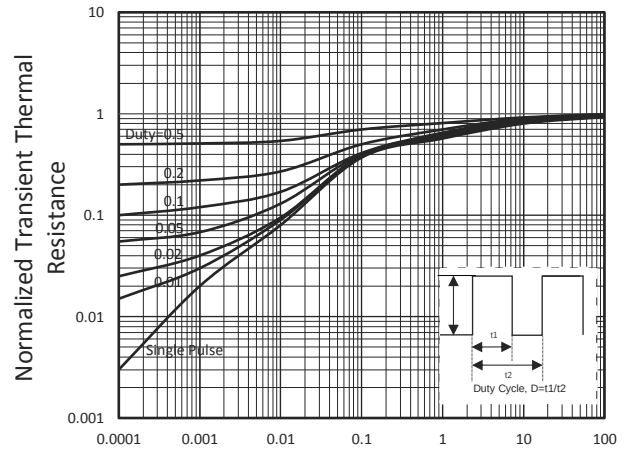
T_J-Junction Temperature(°C)
Drain-Source On Resistance



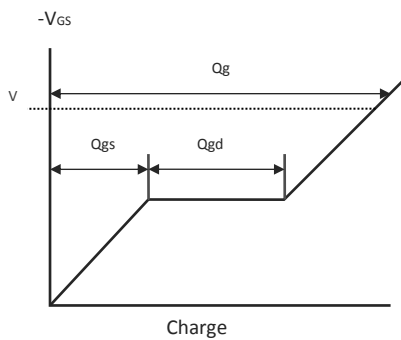
T_J-Junction Temperature(°C)
Drain Current vs T_J



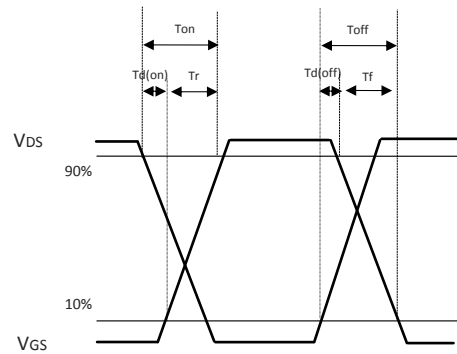
Maximum Safe Operation Area
V_{DS} Voltage (V)



Square Wave Pulse Duration(Sec)
Thermal Transient Impedance

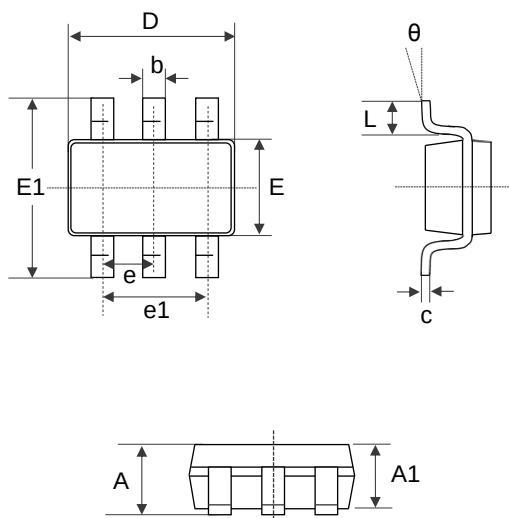


Gate Chrg Waveform

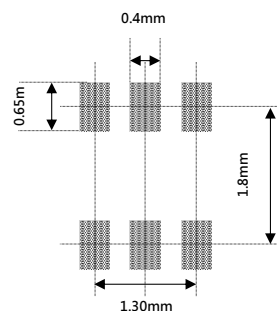


Switching Time Waveform

SOT-363 PACKAGE DIMENSIONS



Recommended Land Pattern



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.800	1.000	0.031	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.250	0.004	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	2.000	2.400	0.079	0.094
e	0.650 BSC.		0.026 BSC.	
e1	1.200	1.400	0.047	0.055
L	0.100	0.350	0.004	0.014
θ	0°	8°	0°	8°