

DESCRIPTION

SMC2868ESD6 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 2868 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

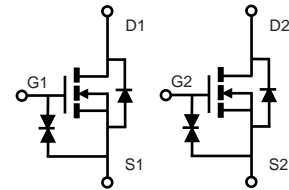
$V_{DS}=20V, I_D=0.8A$

- $R_{DS(ON)}=200m\Omega(Typ.)@V_{GS}=4.5V$
- $R_{DS(ON)}=245m\Omega(Typ.)@V_{GS}=2.5V$
- $R_{DS(ON)}=310m\Omega(Typ.)@V_{GS}=1.8V$
- $R_{DS(ON)}=380m\Omega(Typ.)@V_{GS}=1.5V$
- $R_{DS(ON)}=680m\Omega(Typ.)@V_{GS}=1.2V$

- ◆ High-speed switching, Low On-resistance
- ◆ 1.2V Low gate drive
- ◆ ESD protected

APPLICATIONS

- ◆ Hand-Held Instruments
- ◆ Switching application



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	± 8	V	
I_D	Continuous Drain Current	$T_A=25^{\circ}C$	0.8	A
		$T_A=70^{\circ}C$	0.64	A
I_{DM}	Pulsed Drain Current ^B	1.8	A	
P_D	Power Dissipation ^A	$T_A=25^{\circ}C$	0.28	W
		$T_A=70^{\circ}C$	0.18	W
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)

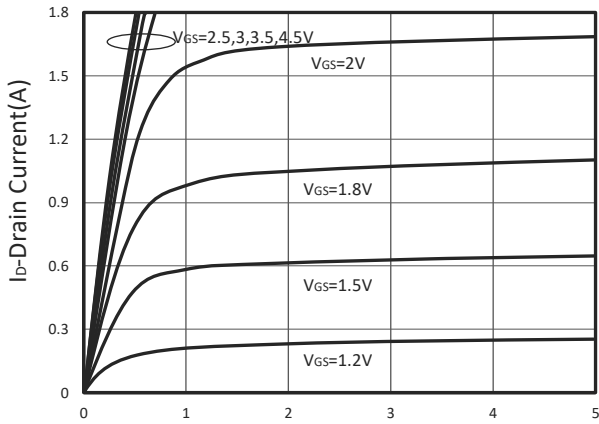
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.3	0.6	1	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 8V$			± 10	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V, T_J=25^\circ C$			1	μA
		$V_{DS}=12V, V_{GS}=0V, T_J=85^\circ C$			10	
$R_{DS(ON)}$	Drain-source On-Resistance ^D	$V_{GS}=4.5V, I_D=0.8A$		200	270	m Ω
		$V_{GS}=2.5V, I_D=0.5A$		245	380	
		$V_{GS}=1.8V, I_D=0.3A$		310	500	
		$V_{GS}=1.5V, I_D=0.2A$		380	600	
		$V_{GS}=1.2V, I_D=0.1A$		680	1000	
G_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=0.5A$		1.7		S
Diode Characteristics						
V_{SD}	Diode Forward Voltage ^D	$I_S=0.2A, V_{GS}=0V$			1	V
I_S	Diode Continuous Forward Current				0.4	A
t_{rr}	Reverse Recovery Time	$I_S=0.5A, di/dt=100A/\mu s$		8.8		ns
Q_{rr}	Reverse Recovery Charge			0.8		nC
Dynamic and Switching Parameters ^F						
Q_g	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=0.5A$		0.97		nC
Q_{gs}	Gate-Source Charge			0.28		
Q_{gd}	Gate-Drain Charge			0.12		
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		42		pF
C_{oss}	Output Capacitance			9		
C_{rss}	Reverse Transfer Capacitance			6		
$t_{d(on)}$	Turn-On Time	$V_{DD}=10V, V_{GS}=4.5V$ $R_G=6\Omega, I_D=0.5A$		6	11	nS
t_r				3.8	7	
$t_{d(off)}$	Turn-Off Time			14	23	
t_f				15	29	

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

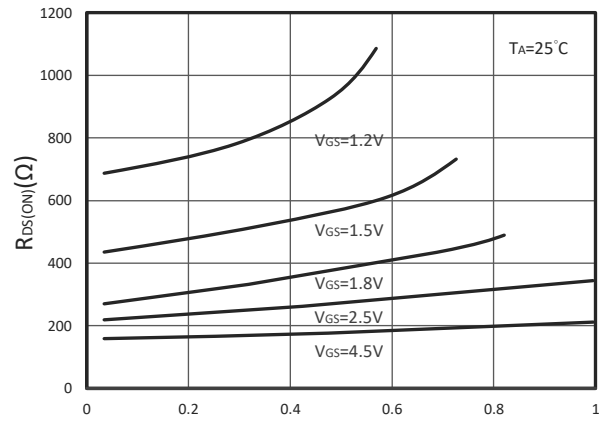
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, $T_{J(MAX)}=150^\circ C$ (initial temperature $T_J=25^\circ C$).
- C. Using $\leq 10s$ junction-to-ambient thermal resistance is base on $T_{J(MAX)}=150^\circ C$.
- D. Pulse test width $\leq 300\mu s$ and duty cycle $\leq 2\%$.
- E. The EAS data shows maximum, The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=45A$
- F. Guaranteed by design, not subject to production testing.

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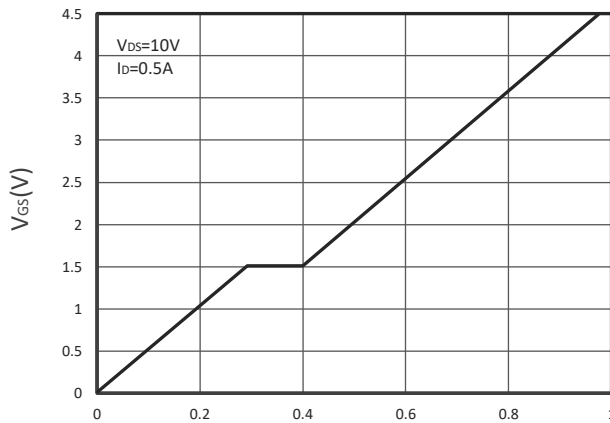
TYPICAL CHARACTERISTICS



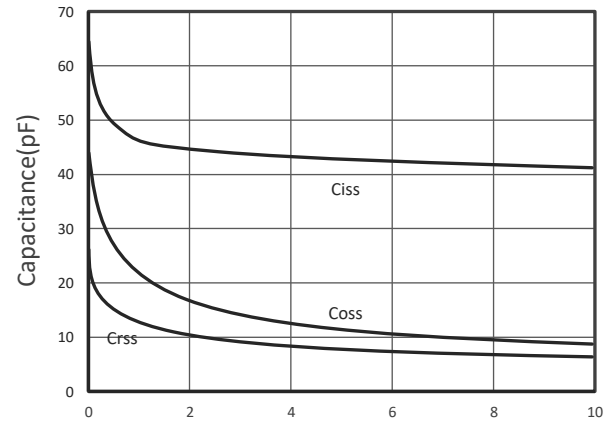
Output Characteristics



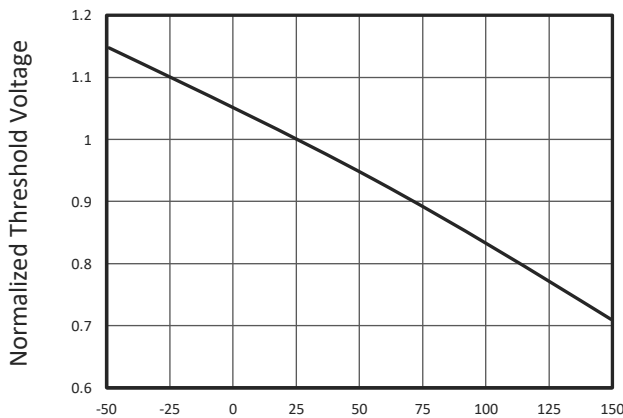
Drain-Source On Resistance



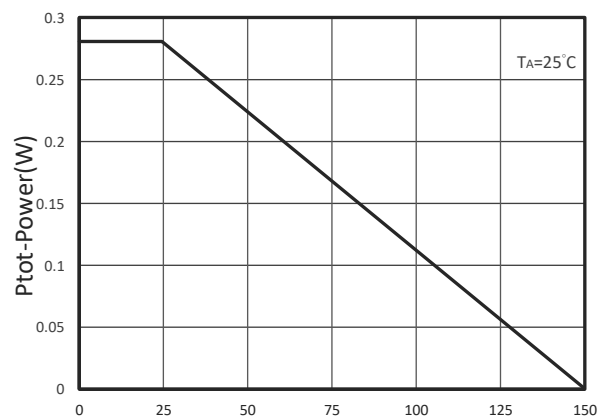
Gate Charge



Capacitance

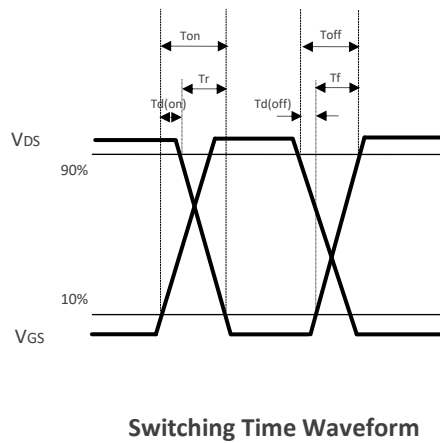
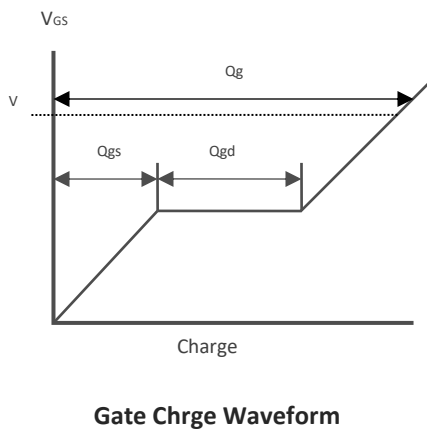
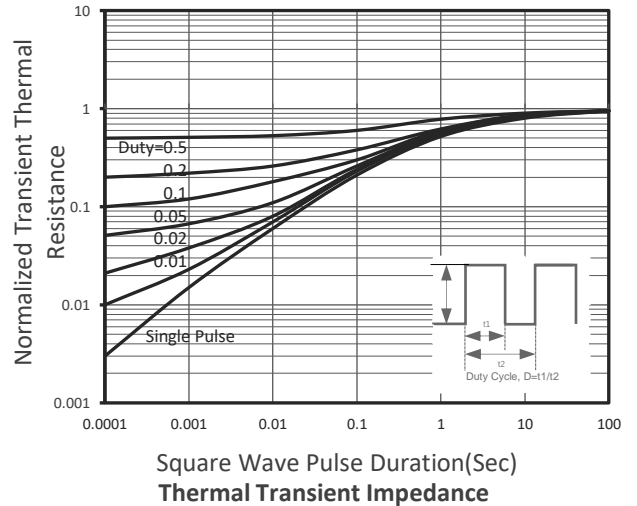
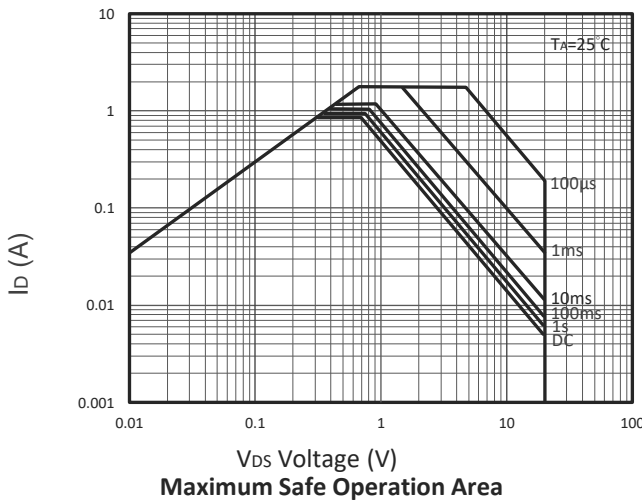
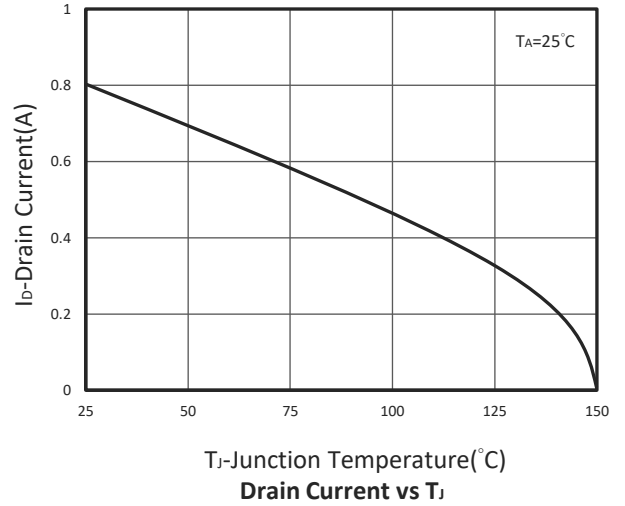
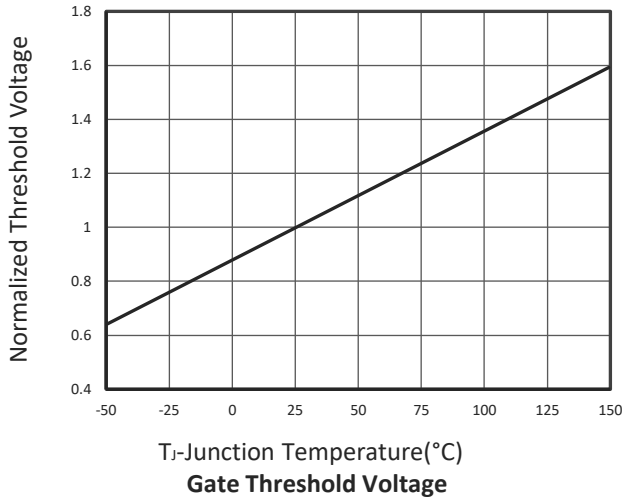


Gate Threshold Voltage

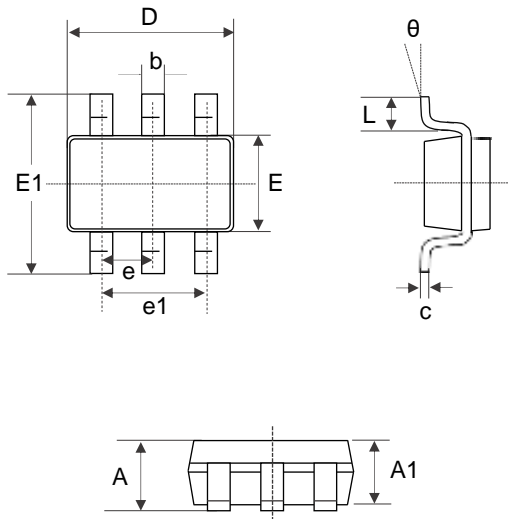


Power Dissipation

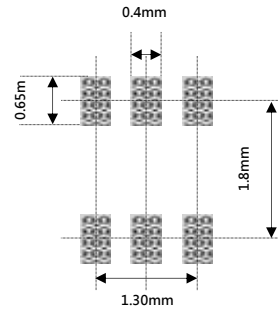
TYPICAL CHARACTERISTICS



■ 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°