SemTron Microtech Corporation

SMC2208ECD

Dual N-Channel MOSFET

■DESCRIPTION

SMC2208E is the dual N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced trench technology devices are well suited for high efficiency fast switching applications, low in-line power loss are needed in small outline surface mount package.

■PART NUMBER INFORMATION

SMC 2208 E CD - TR G
a b c d e f

a : Company name.
b : Product Serial number.
c : ESD
d : Package code CD: SOT-363/SC70-6
e : Handling code TR: Tape&Reel
f : Green produce code G: *RoHS Compliant*

■FEATURES

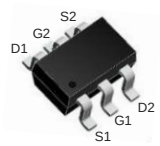
V_{DS} = 20V, I_D = 0.82A

$R_{DS(ON)}$=195mΩ(Typ.)@V_{GS}=4.5V
$R_{DS(ON)}$=230mΩ(Typ.)@V_{GS}=2.5V
$R_{DS(ON)}$=300mΩ(Typ.)@V_{GS}=1.8V
$R_{DS(ON)}$=355mΩ(Typ.)@V_{GS}=1.5V
$R_{DS(ON)}$=580mΩ(Typ.)@V_{GS}=1.2V

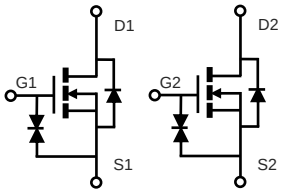
◆ESD protected
◆Fast switching
◆1.2V Low gate drive applications

■APPLICATIONS

◆Hend-Held Instruments
◆Low current DC/DC Applications



SOT-363



■ABSOLUTE MAXIMUM RATINGS (T_A = 25°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°C	0.82	A
		T_A=70°C	0.65	A
I_{DM}	Pulsed Drain Current [A]		3.3	A
P_D	Power Dissipation [B]	T_A=25°C	0.3	W
		T_A=70°C	0.19	W
T_J	Operation Junction Temperature		-55/150	°C
T_{STG}	Storage Temperature Range		-55/150	°C

■THERMAL RESISTANCE

Symbol	Parameter		Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient [B]	t≦10s		420	°C/W
	Thermal Resistance Junction to Ambient [BC]	Steady-State		460	

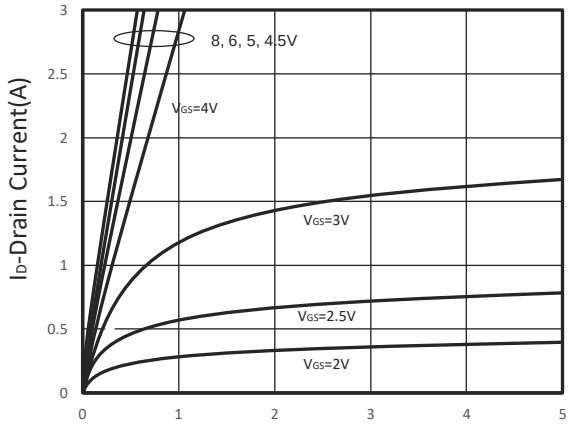
■ELECTRICAL CHARACTERISTICS(T_A = 25°C Unless otherwise noted)

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	0.3	0.6	1	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±8V			±20	μA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V, T_J=25°C			1	μA
		V_{DS}=16V, V_{GS}=0V, T_J=75°C			10	
$R_{DS(ON)}$	Drain-source On-Resistance	V_{GS}=4.5V, I_D=0.82A		195	270	mΩ
		V_{GS}=2.5V, I_D=0.6A		230	320	
		V_{GS}=1.8V, I_D=0.3A		300	400	
		V_{GS}=1.5V, I_D=0.2A		355	500	
		V_{GS}=1.5V, I_D=0.1A		580	800	
G_{fs}	Forward Transconductance	V_{DS}=5V, I_D=0.82A		3.8		S
Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_S=0.5A, V_{GS}=0V			1	V
I_S	Diode Continuous Forward Current				0.6	A
Dynamic and Switching Parameters						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D=0.5A		1.4	2	nC
Q_{gs}	Gate-Source Charge			0.17	0.24	
Q_{gd}	Gate-Drain Charge			0.3	0.42	
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V, f=1MHz		50		pF
C_{oss}	Output Capacitance			18		
C_{rss}	Reverse Transfer Capacitance			10		
$t_{d(on)}$	Turn-On Time	V_{DD}=10V, V_{GEN}=4.5V, R_G=10Ω, I_D=0.5A		4.6	9	nS
t_r				3.2	6	
$t_{d(off)}$	Turn-Off Time			12.5	24	
t_f				5	10	

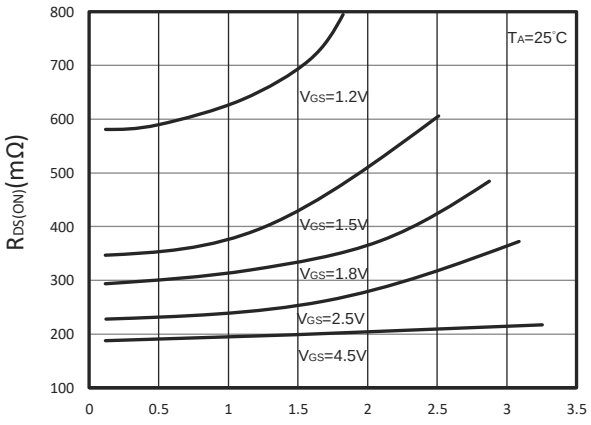
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

A. Pulsed width limited by maximum junction temperature, $T_{J(MAX)}$=150°C.
B. Measure the value in a still air environment at T_A=25°C, using an installation mounted on a 1 in2 FR-4 board, maximum junction temperature $T_{J(MAX)}$=150°C.
C. $T_{J(MAX)}$=150°C,using junction-to-case thermal resistance ($R_{θJC}$) is more useful in additional heat sinking is used.

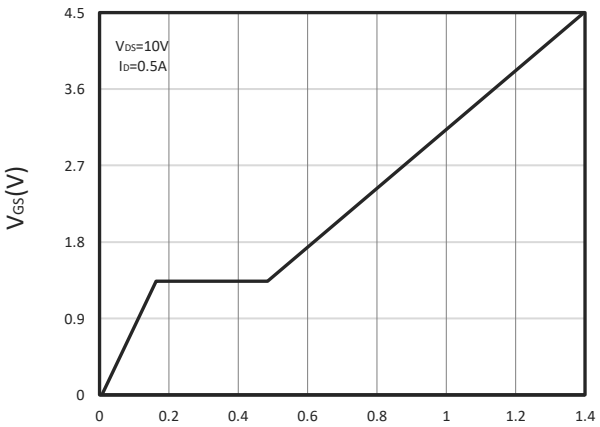
TYPICAL CHARACTERISTICS



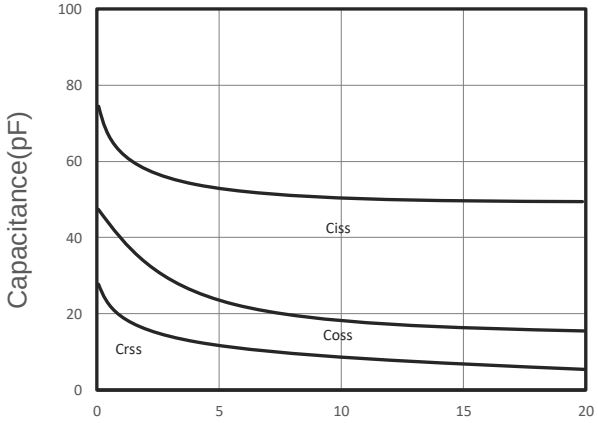
Output Characteristics



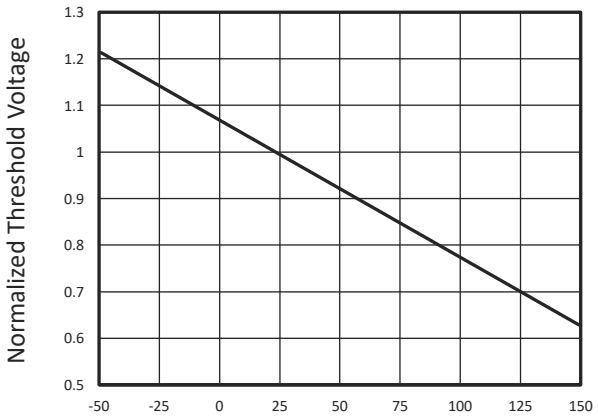
Drain-Source On Resistance



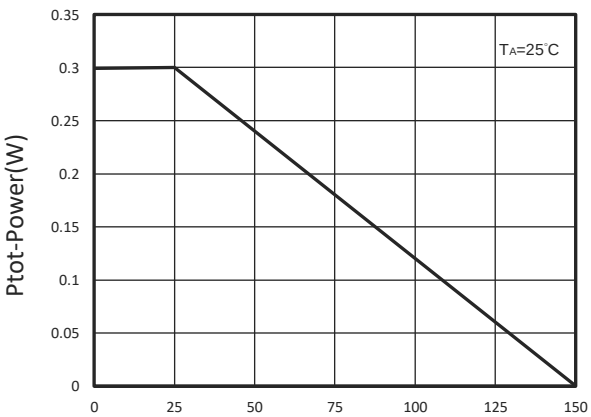
Gate Charge



Capacitance

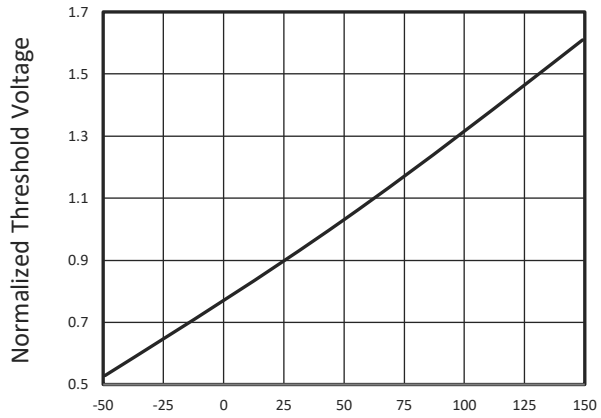


Gate Threshold Voltage



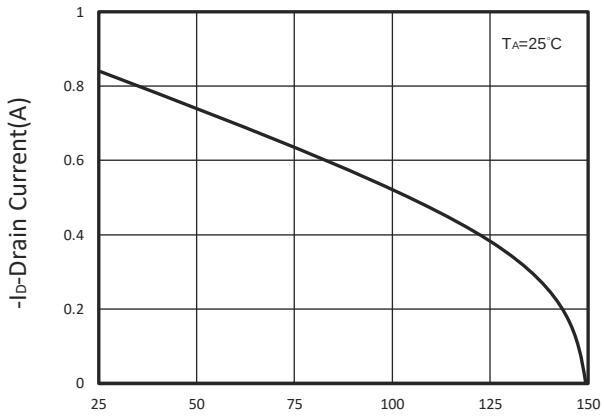
Power Dissipation

TYPICAL CHARACTERISTICS



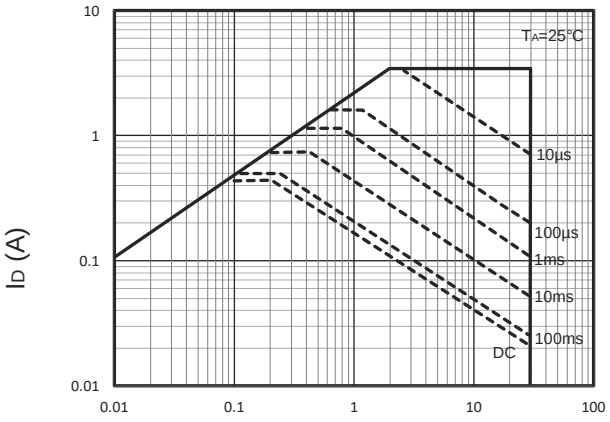
TJ-Junction Temperature(°C)

Gate Threshold Voltage



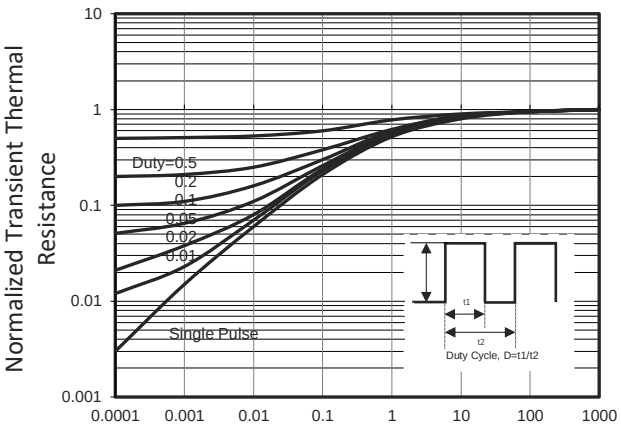
TJ-Junction Temperature(°C)

Drain Current vs TJ



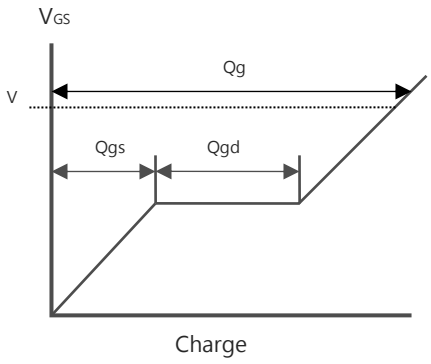
VDS Voltage (V)

Maximum Safe Operation Area

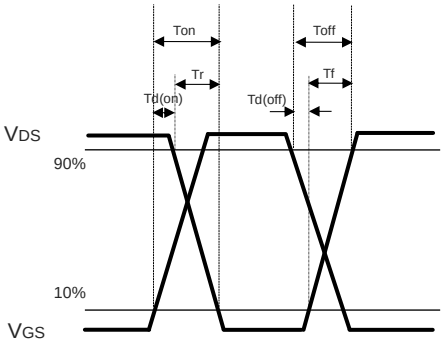


Square Wave Pulse Duration(Sec)

Thermal Transient Impedance

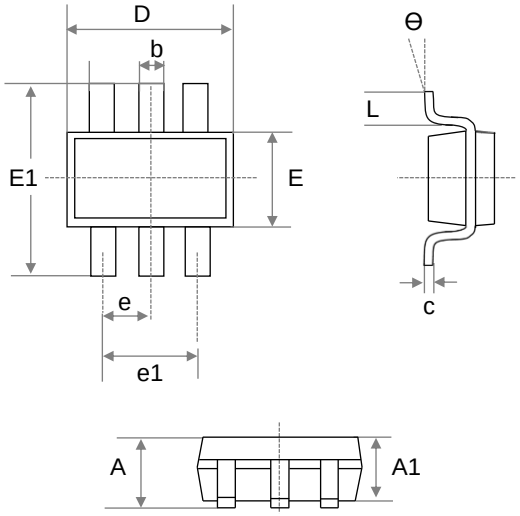


Gate Chrge Waveform

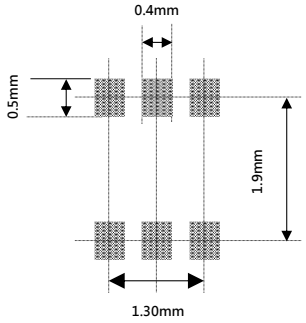


Switching Time Waveform

■SOT-363 PACKAGE DIMENSIONS



Recommended Land Pattern



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.800	1.100	0.031	0.043
A1	0.800	1.000	0.031	0.039
b	0.100	0.330	0.004	0.013
c	0.100	0.250	0.004	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.053	0.045
E1	1.800	2.400	0.071	0.094
e	0.650 BSC.		0.026 BSC.	
e1	1.300 BSC.		0.052 BSC.	
L	0.100	0.350	0.004	0.014
Θ	0°	8°	0°	8°