

Dual N-Channel MOSFET

DESCRIPTION

SMC3240DM is the dual N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance. This device is ideal for load switch applications.

PART NUMBER INFORMATION

SMC 3240D M - TR G
 a b c d e

a : Company name.
 b : Product Serial number.
 c : Package code M:SOP-8
 d : Handling code TR:Tape&Reel
 e : Green produce code G:RoHS Compliant

FEATURES

$V_{DS}=30V$, $I_D=11A$

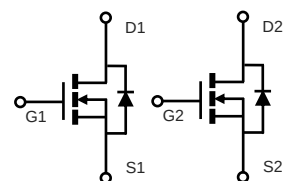
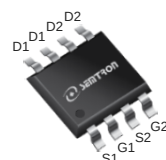
$R_{DS(ON)}=9m\Omega(Typ.)@V_{GS}=10V$

$R_{DS(ON)}=11m\Omega(Typ.)@V_{GS}=4.5V$

- ◆ 100% EAS Guaranteed
- ◆ Improved dv/dt capability
- ◆ High power and current handling capability

APPLICATIONS

- ◆ Power Management
- ◆ DC/DC Power System
- ◆ Load Switch



SOP-8

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

Symbol	Parameter		Rating	Units
V _{DSS}	Drain-Source Voltage		30	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current (V _{GS} =10V)	T _A =25°C	11	A
		T _A =70°C	8.8	A
I _{DM}	Pulsed Drain Current ^B		44	A
I _{AS}	Avalanche Current ^B		20	A
E _{AS}	Single Pulse Avalanche energy L=0.1mH ^B		20	mJ
P _D	Power Dissipation ^A	T _A =25°C	2	W
		T _A =70°C	1.3	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 ^A	$t \leq 10s$	62	$^\circ C/W$
	Thermal Resistance Junction to Ambient ^{AC}	Steady-State	90	

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

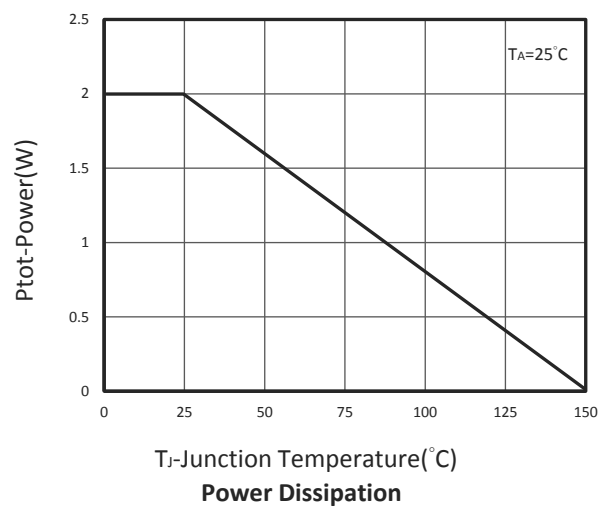
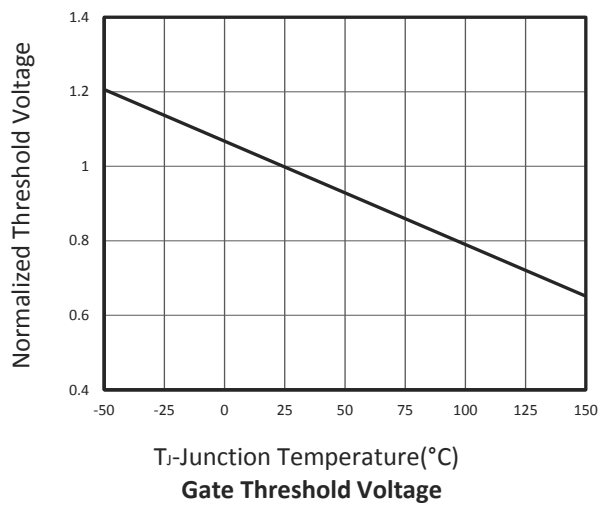
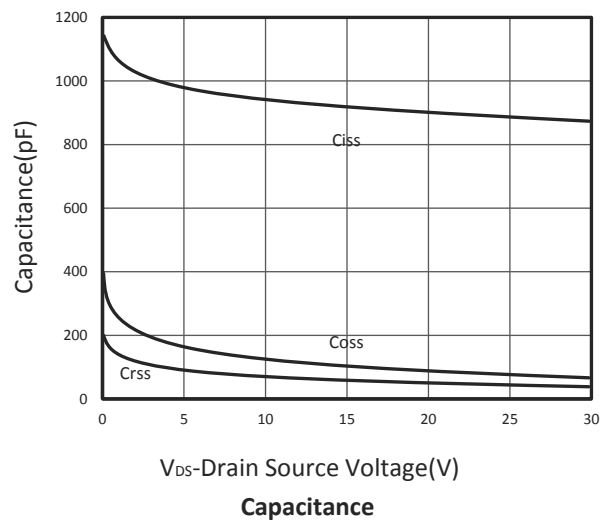
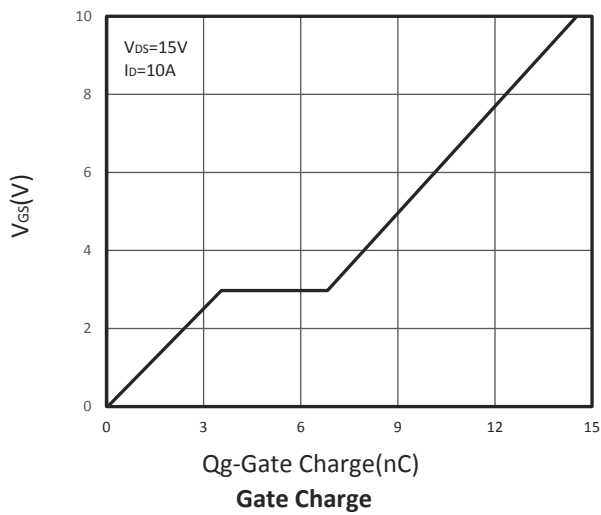
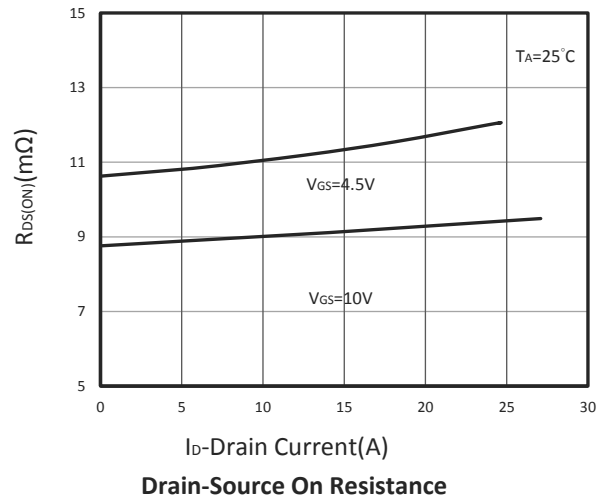
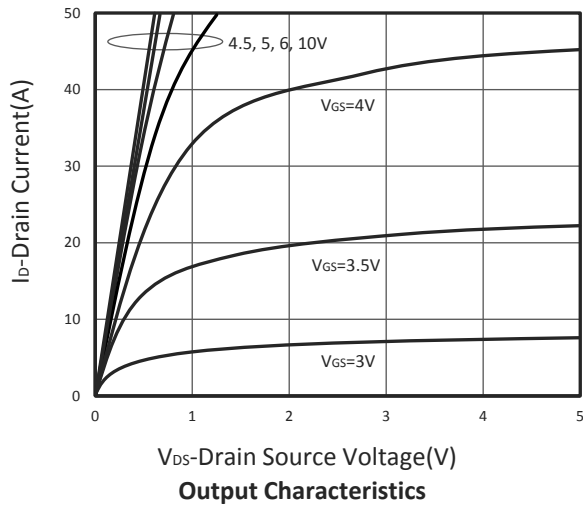
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V, T _J =25°C			1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =75°C			10	
R _{DS(ON)}	Drain-source On-Resistance [Ⓟ]	V _{GS} =10V, I _D =11A V _{GS} =4.5V, I _D =10A		9 11	11 14	mΩ
G _{fs}	Forward Transconductance	V _{DS} =5V, I _D =10A		25		S
Diode Characteristics						
V _{SD}	Diode Forward Voltage [Ⓟ]	I _S =1A, V _{GS} =0V			1	V
I _S	Diode Continuous Forward Current				5.5	A
t _{rr}	Revese Recovery Time	I _S =10A, dI/dt=100A/μs		10.8		ns
Q _{rr}	Reverse Recovery Charge			4.3		nC
Dynamic and Switching Parameters [Ⓔ]						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _D =10A		14.4	20.1	nC
Q _g	Total Gate Charge (4.5V)			7	9.8	
Q _{gs}	Gate-Source Charge			3.5	4.9	
Q _{gd}	Gate-Drain Charge			3.2	4.5	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz		920		pF
C _{oss}	Output Capacitance			140		
C _{rss}	Reverse Transfer Capacitance			82		
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		2.6		
t _{d(on)}	Turn-On Time	V _{DD} =15V, V _{GEN} =10V R _G =6Ω, I _D =1A		13	24	nS
t _r				10.3	20	
t _{d(off)}	Turn-Off Time			22	42	
t _f				5	10	

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

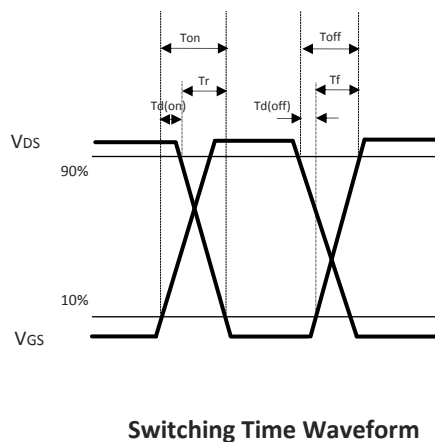
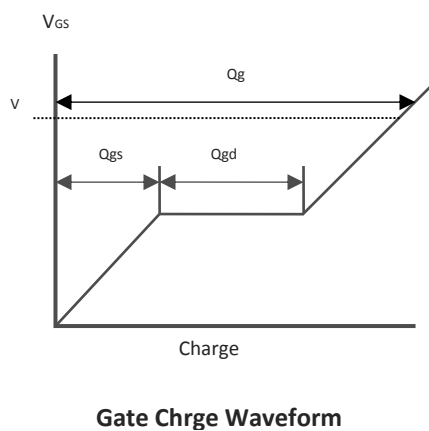
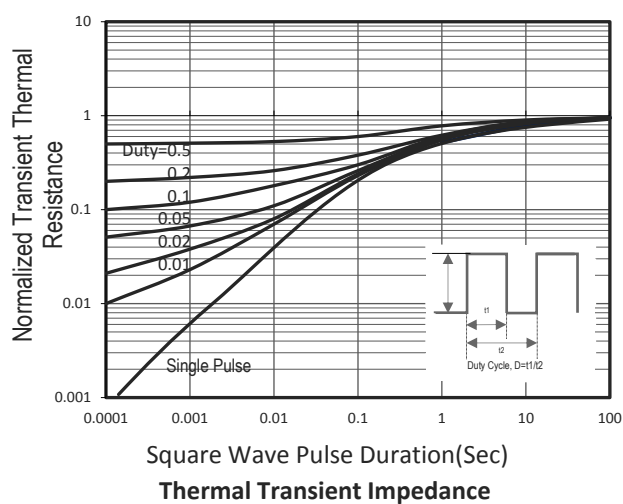
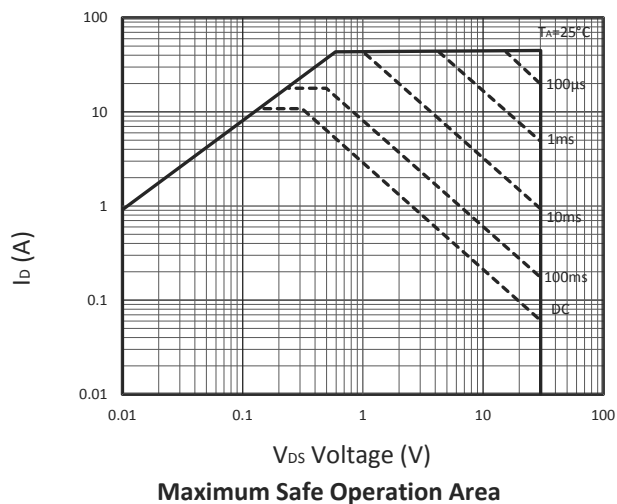
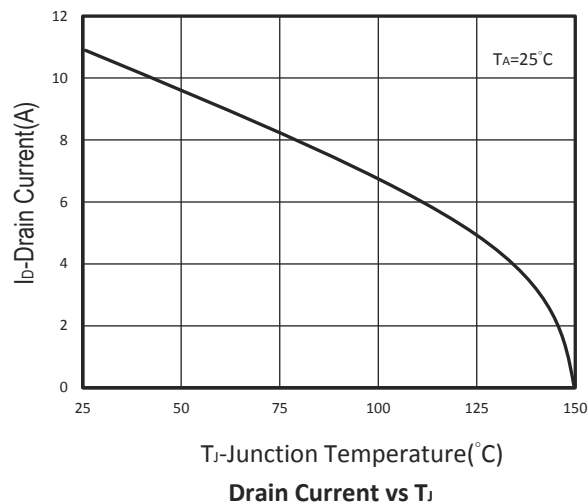
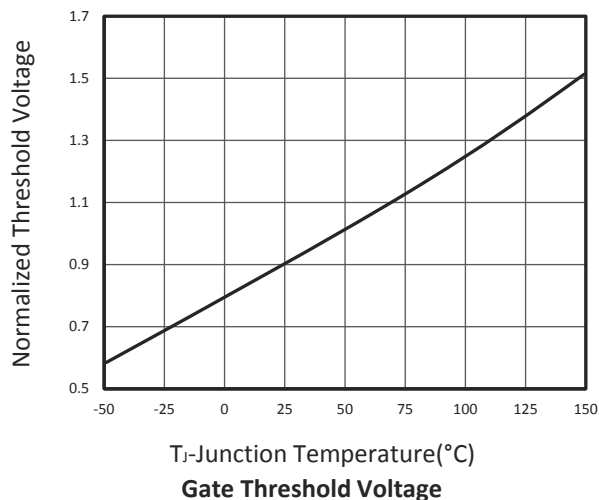
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, T_{J(MAX)}=150 $^\circ$ C.
- C. Using $\leq$ 10s junction-to-ambient thermal resistance is base on T_{J(MAX)}=150 $^\circ$ C.
- D. Pulse test width $\leq$ 300 μ s and duty cycle $\leq$ 2%.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

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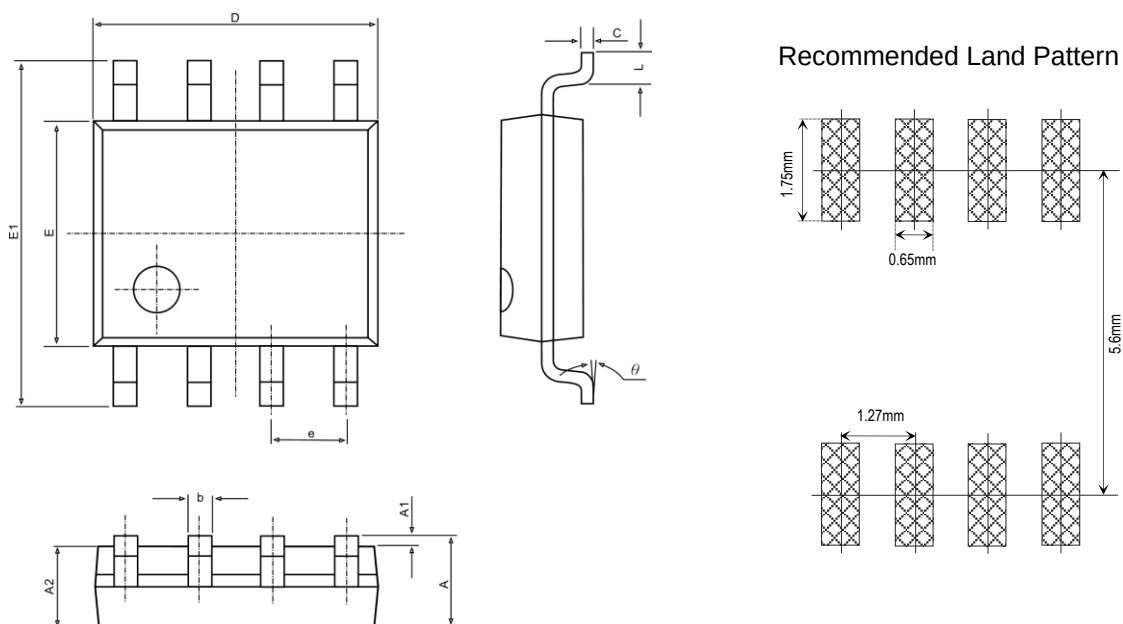
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



■ SOP-8 PACKAGE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.300	1.500	0.051	0.059
b	0.390	0.490	0.015	0.019
c	0.200	0.250	0.008	0.010
D	4.800	5.100	0.189	0.201
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 BSC		0.050 BSC	
L	0.500	0.800	0.020	0.031
θ	0°	8°	0°	8°