

Single N-Channel MOSFET

DESCRIPTION

SMC6276ESA used trench technology are well suited for high efficiency fast switching applications, this MOSFET has been designed to minimize the on-state resistance and yet maintain superior switching performance, this devices are well suited for applications in the small surface mount package.

PART NUMBER INFORMATION

SMC 6276 E SA - TR G
 a b c d e f

a : Company name
 b : Product Serial number
 c : ESD Protection
 d : Package code SA: SOT-723
 e : Handling code TR: Tape&Reel
 f : Green produce code G: RoHS Compliant

FEATURES

$V_{DS}=60V$, $I_D=0.2A$

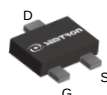
$R_{DS(ON)}=1.5\Omega(Typ.)@V_{GS}=10V$

$R_{DS(ON)}=2.0\Omega(Typ.)@V_{GS}=4.5V$

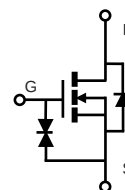
- ◆ High Speed Switching
- ◆ ESD Protection $>\pm 2KV$ HBM

APPLICATIONS

- ◆ Load Switch
- ◆ Portable appliances



SOT-723



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

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_A=25^\circ C$	0.2
		$T_A=70^\circ C$	0.16
I_{DM}	Pulsed Drain Current ^b	0.8	A
P_D	Power Dissipation ^a	$T_A=25^\circ C$	0.15
		$T_A=70^\circ C$	0.1
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	833	$^\circ C/W$

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

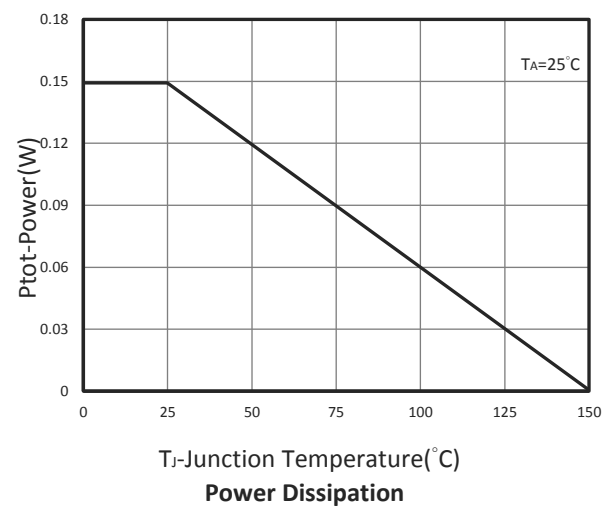
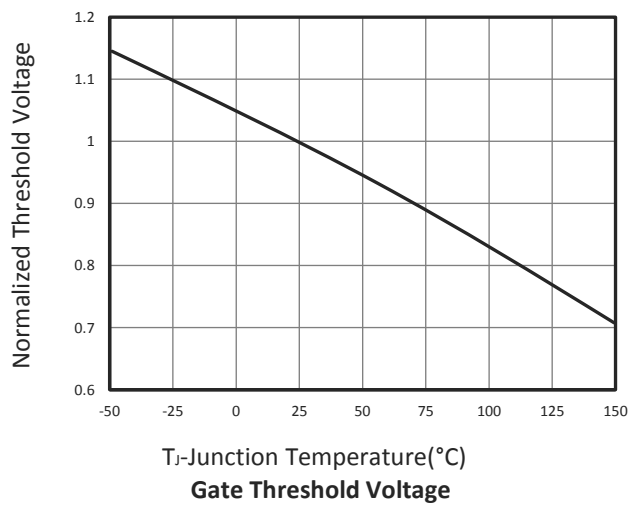
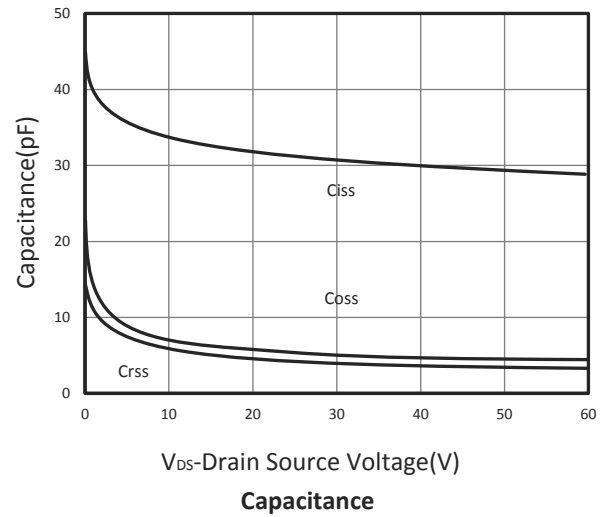
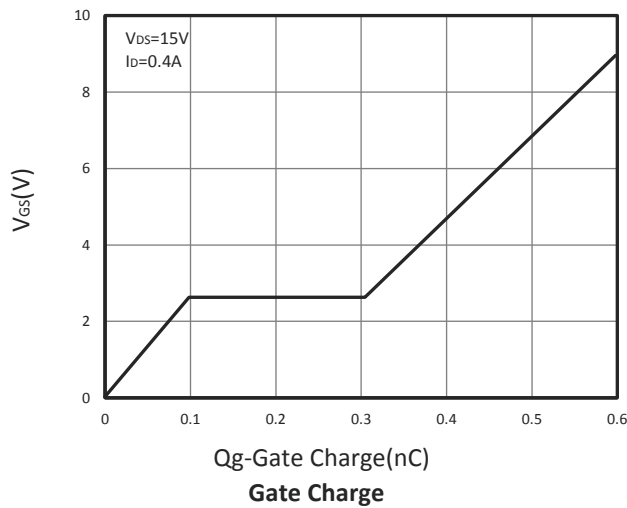
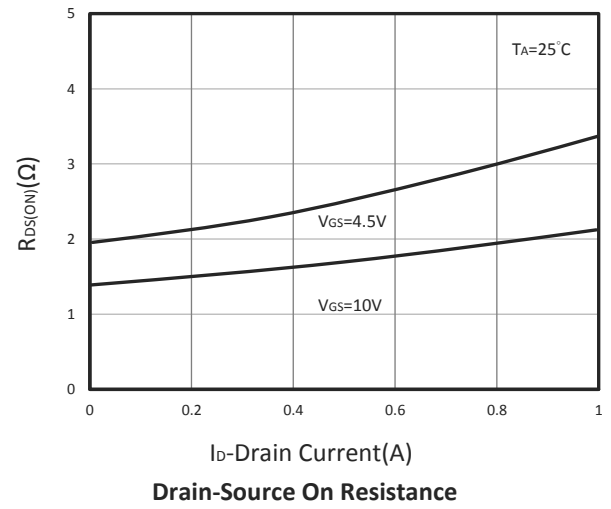
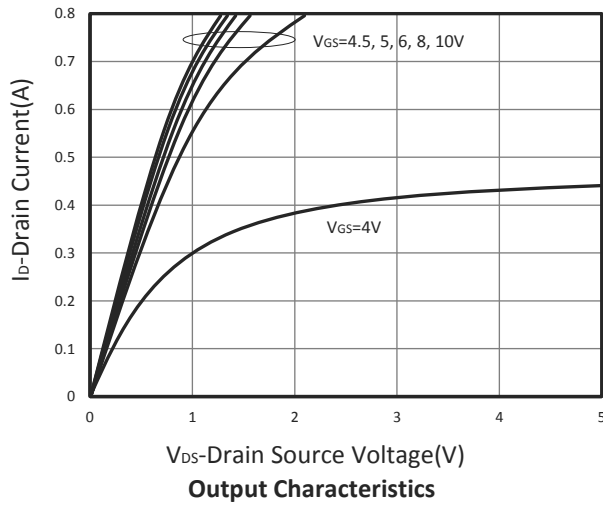
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±10	μA
I _{DSS}	Zero Gate 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			30	
R _{DS(ON)}	Drain-source On-Resistance ⁸	V _{GS} =10V, I _D =0.2A		1.5	2	Ω
		V _{GS} =4.5V, I _D =0.15A		2	3	
Diode Characteristics						
V _{SD}	Diode Forward Voltage ⁹	I _S =0.2A, V _{GS} =0V			1	V
I _S	Diode Continuous Forward Current				0.1	A
t _{rr}	Reverse Recovery Time	I _S =0.4A, dI/dt=100A/μs		40		ns
Q _{rr}	Reverse Recovery Charge			39		nC
Dynamic and Switching Parameters ^E						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V I _D =0.4A		0.65		nC
Q _{gs}	Gate-Source Charge			0.1		
Q _{gd}	Gate-Drain Charge			0.21		
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		31		pF
C _{oss}	Output Capacitance			4.2		
C _{rss}	Reverse Transfer Capacitance			3		
t _{d(on)}	Turn-On Time	V _{DD} =30V, V _{GS} =10V, R _G =25Ω, I _D =0.4		3.8	7	nS
t _r				3.6	6.8	
t _{d(off)}	Turn-Off Time			16	30	
t _f				10	19	

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

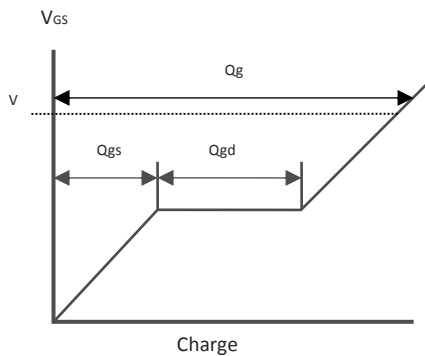
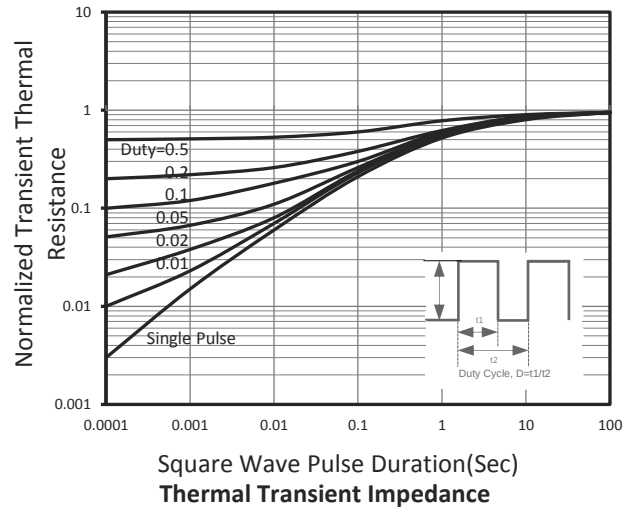
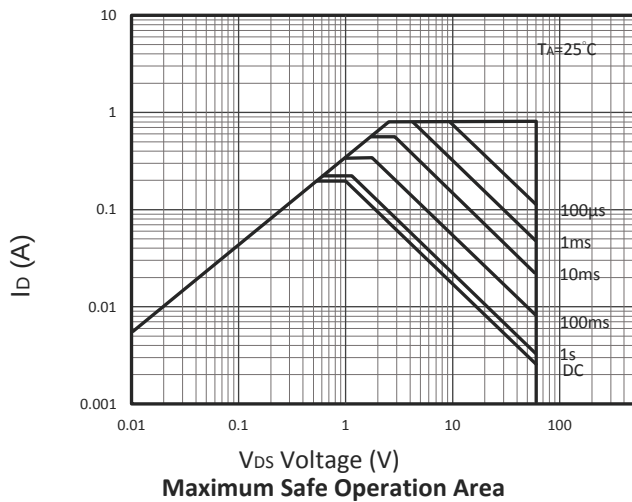
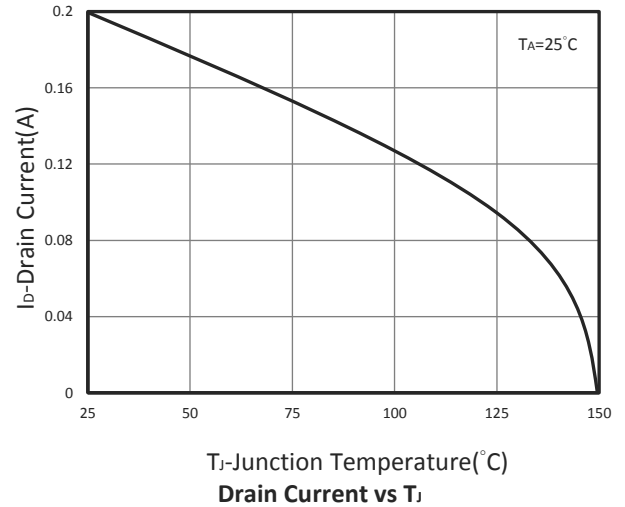
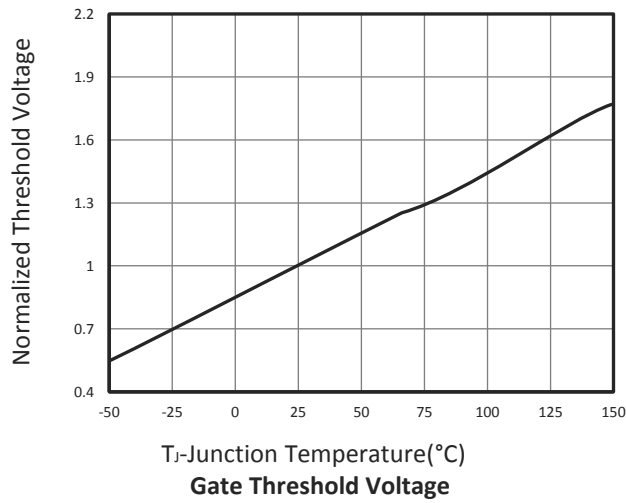
- A. Surface mounted on FR4 board using the minimum recommended pad size.
- B. Pulsed width limited by maximum junction temperature, T_{J(MAX)}=150°C.
- C. Using ≤ 10s junction-to-ambient thermal resistance is base on T_{J(MAX)}=150°C.
- D. Pulse test width ≤300μs and duty cycle ≤ 2%.
- E. Guaranteed by design, not subject to production testing.

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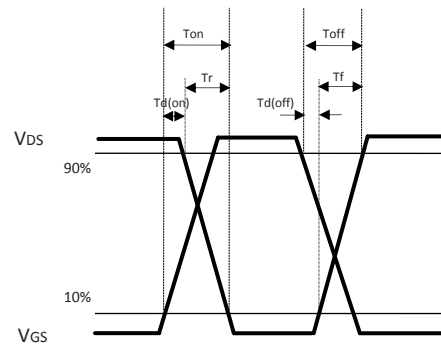
TYPICAL CHARACTERISTICS



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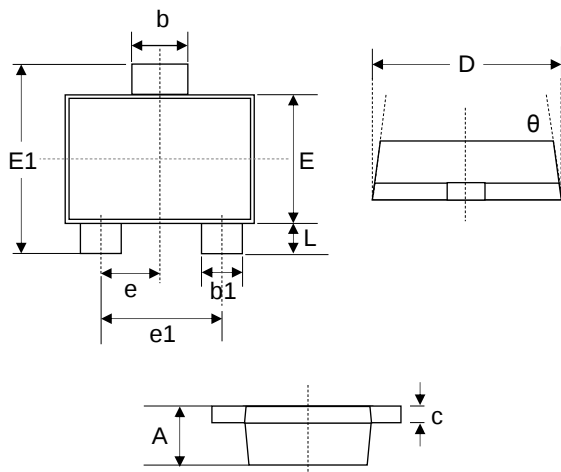


Gate Chrg Waveform

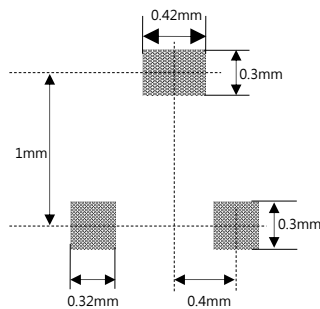


Switching Time Waveform

■ SOT-723 PACKAGE DIMENSIONS



Recommended Land Pattern



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.430	0.500	0.017	0.020
b	0.270	0.370	0.011	0.015
b1	0.170	0.270	0.007	0.011
c	0.001	0.015	0.003	0.006
D	1.150	1.250	0.045	0.049
E	0.750	0.850	0.030	0.033
E1	1.150	1.250	0.045	0.049
e	0.400 BSC.		0.016 BSC.	
e1	0.800 BSC.		0.032 BSC.	
L	0.200 BSC.		0.008 BSC.	
θ	7°		7°	