

DESCRIPTION

SMC6276LESN 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 6276L E SN - TR G
 a b c d e f

a : Company name.
 b : Product Serial number.
 c : ESD Protection
 d : Package code SN: SOT-23
 e : Handling code TR: Tape&Reel
 f : Green produce code G: RoHS Compliant

FEATURES

$V_{DS}=60V$, $I_D=0.45A$

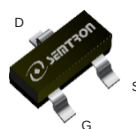
$R_{DS(ON)}=1.6\Omega(Typ.)@V_{GS}=10V$

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

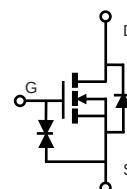
- ◆Extremely Low Threshold Voltage
- ◆Low Input Capacitance
- ◆ESD Protection $>\pm 2KV$

APPLICATIONS

- ◆Portable Appliances
- ◆High speed switch
- ◆Battery management



SOT-23



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	$T_A=25^\circ C$	0.45
		$T_A=70^\circ C$	0.36
I_{DM}	Pulsed Drain Current ^a	1.8	A
P_D	Power Dissipation ^a	$T_A=25^\circ C$	0.83
		$T_A=70^\circ C$	0.53
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	$t \leq 10s$	150	$^\circ C/W$
	Thermal Resistance Junction to Ambient ^{AC}	Steady-State	300	$^\circ C/W$

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

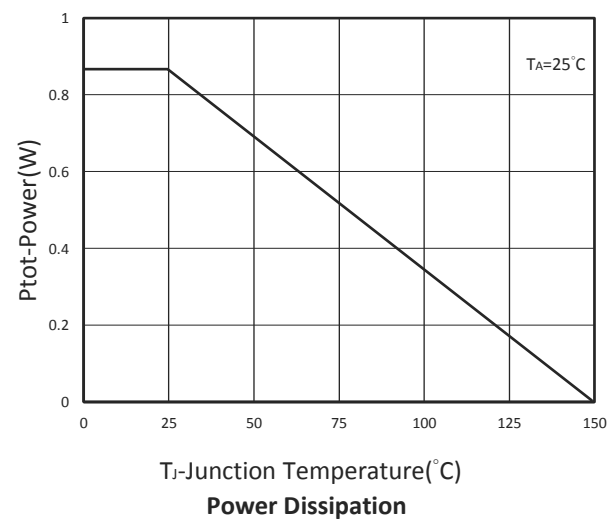
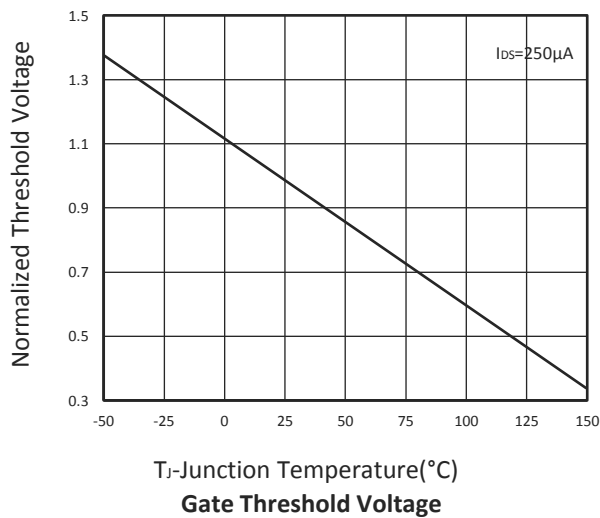
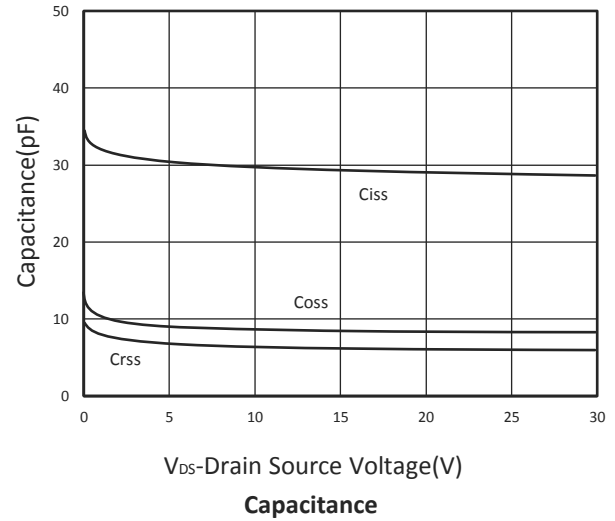
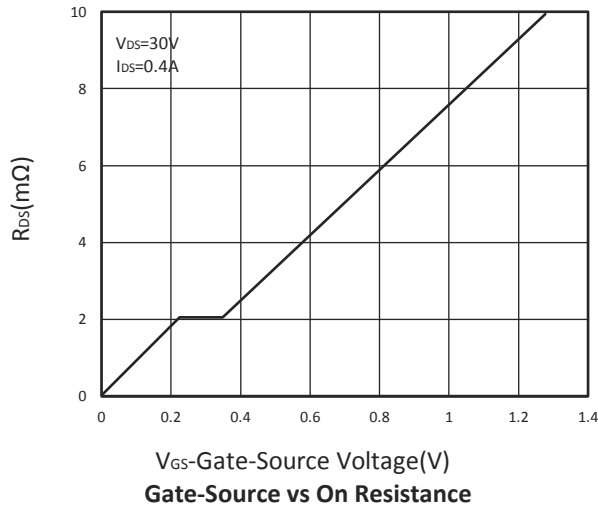
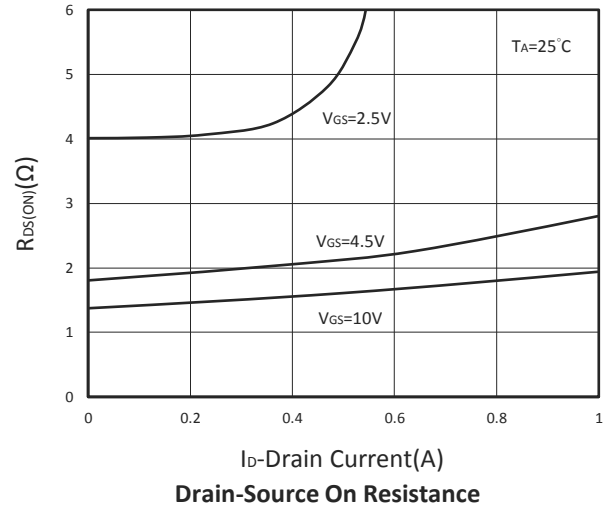
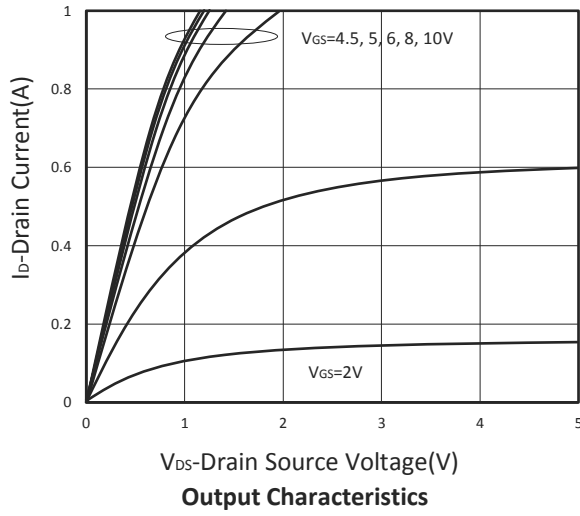
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.7	1	1.2	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±10	μA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V, T _J =25°C			1	μA
		V _{DS} =48V, V _{GS} =0V, T _J =85°C			30	
R _{DS(ON)}	Drain-source On-Resistance [Ⓟ]	V _{GS} =10V ,I _D =0.45A V _{GS} =4.5V, I _D =0.3A V _{GS} =2.5V, I _D =0.1A		1.6 2.0 4.0	2.0 2.5 5.5	Ω
Diode Characteristics						
V _{SD}	Diode Forward Voltage [Ⓟ]	I _S =0.2A, V _{GS} =0V			1.3	V
I _S	Diode Continuous Forward Current				0.23	A
Dynamic and Switching Parameters [Ⓔ]						
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V I _D =0.4A		1.28		nC
Q _{gs}	Gate-Source Charge			0.22		
Q _{gd}	Gate-Drain Charge			0.1		
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz		28		pF
C _{oss}	Output Capacitance			7.6		
C _{rss}	Reverse Transfer Capacitance			6.4		
t _{d(on)}	Turn-On Time	V _{DD} =30V, V _{GS} =10V, R _G =3.9Ω, I _D =0.4		3.3	6.3	nS
t _r				3.9	7.4	
t _{d(off)}	Turn-Off Time			8.8	16.7	
t _f				12	22.8	

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

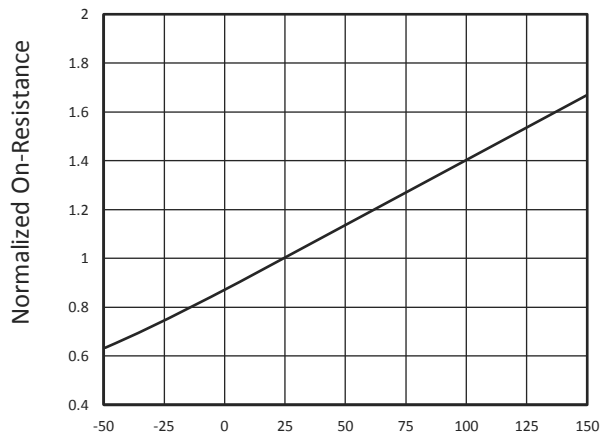
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, T_{J(MAX)}=150 $^{\circ}$ C.
- C. Using $\leq$ 10s junction-to-ambient thermal resistance is base on T_{J(MAX)}=150 $^{\circ}$ C.
- D. Pulse test width $\leq$ 300 μ s and duty cycle $\leq$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

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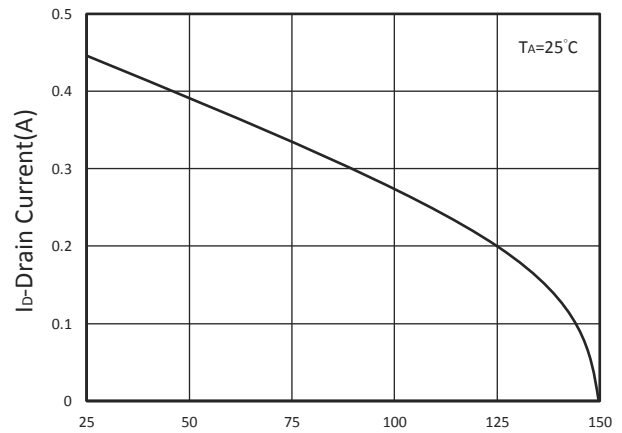
TYPICAL CHARACTERISTICS



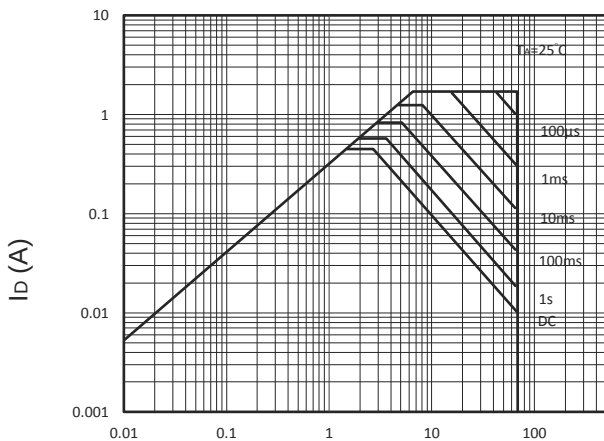
TYPICAL CHARACTERISTICS



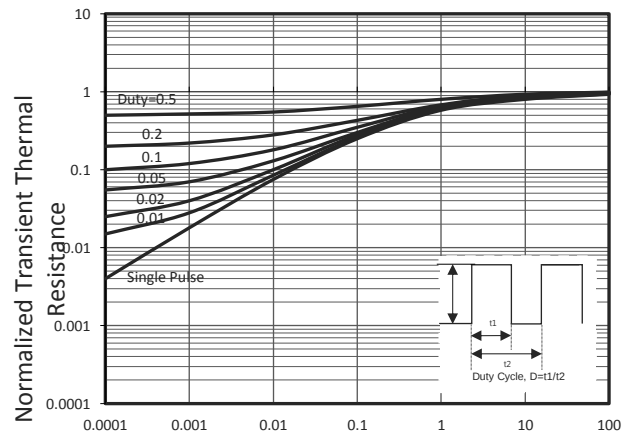
T_J-Junction Temperature(°C)
Drain-Source On Resistance



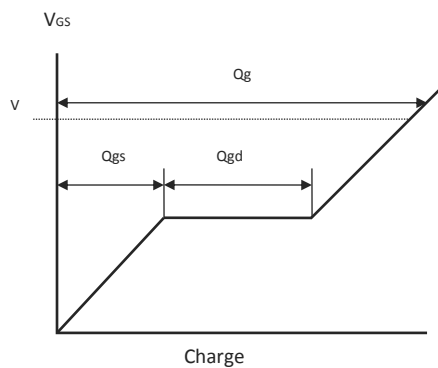
T_J-Junction Temperature(°C)
Drain Current vs T_J



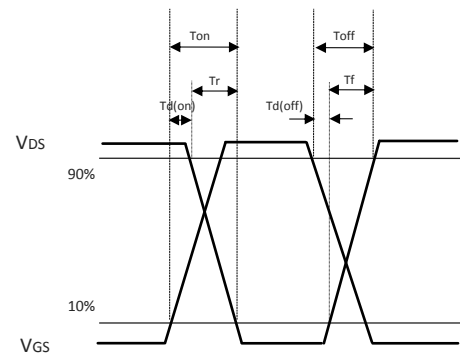
V_{DS} Voltage (V)
Maximum Safe Operation Area



Square Wave Pulse Duration(Sec)
Thermal Transient Impedance

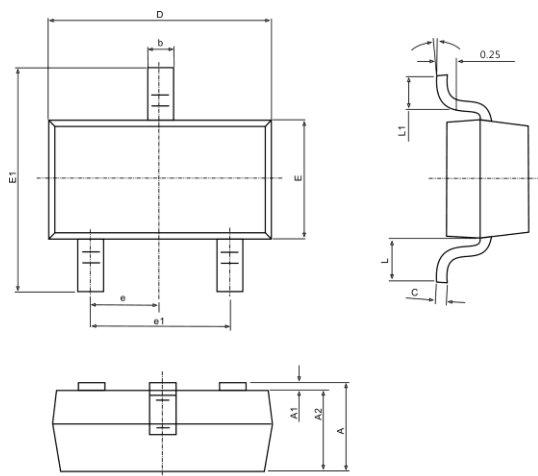


Gate Chrg Waveform

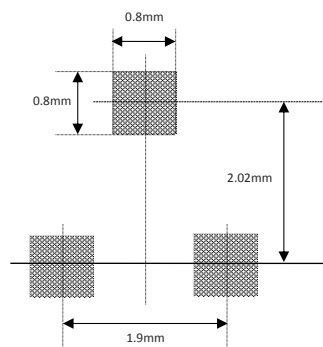


Switching Time Waveform

SOT-23 PACKAGE DIMENSIONS



Recommended Land Pattern



1.

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 BSC.		0.037 BSC	
e1	1.800	2.000	0.071	0.079
L	0.550 BSC		0.022 BSC	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°