

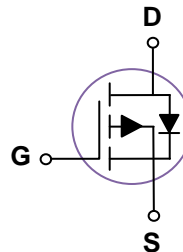
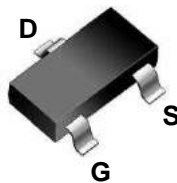
### General Description

These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

### Features

$V_{DS}$	-20V
$I_D$ (at $V_{GS}=-4.5V$ )	-2.0A
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$ )	120m $\Omega$ (Max)

### SOT23



### Absolute Maximum Ratings $T_A=25^\circ C$ unless otherwise noted

Parameter	Symbol	Maximum	Units	
Drain-Source Voltage	$V_{DS}$	-20	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V	
Drain Current-Continuous	TC=25 $^\circ C$	$I_D$	-2.0	A
	TC=100 $^\circ C$	$I_D$	-1.25	A
Maximum Power Dissipation	$P_D$	1.4	W	
Drain Current – Pulsed	$I_{DM}$	-8.0	A	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ C$	

### Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta Jc}$		1.1	$^\circ C / W$
Thermal Resistance unction-to-Ambient	$R_{\theta JA}$		60	$^\circ C / W$

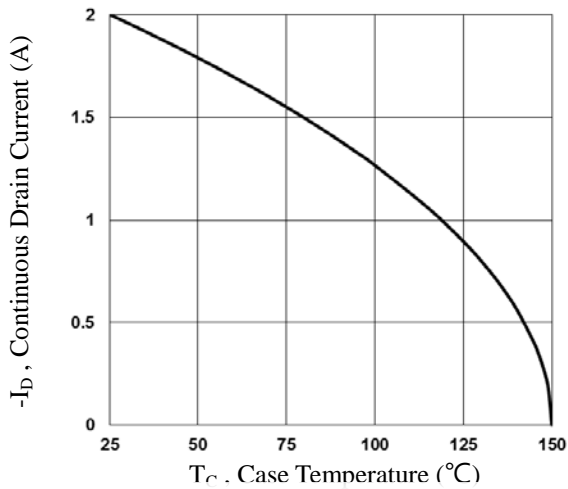
**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-20V, V_{GS}=0V$			1	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-1.0	V
$R_{DS(ON)}$	Drain-Source On-State esistance	$V_{GS}=-4.5V, I_D=-1.5A$		90	120	m $\Omega$
		$V_{GS}=-2.5V, I_D=-1.5A$		115	150	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
$C_{ISS}$	Input Capacitance	$V_{DS}=-10V, V_{GS}=0V,$ $F=1.0MHz$		280		pF
$C_{OSS}$	Output Capacitance			65		pF
$C_{RSS}$	Reverse Transfer Capacitance			28		pF
<b>SWITCHING PARAMETERS</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=-10V, I_D=-1A,$ $V_{GS}=-4.5V,$ $R_G=2.5\Omega$		12		nS
$t_r$	Turn-on Rise Time			54		nS
$t_{d(off)}$	Turn-Off Delay Time			15		nS
$t_f$	Turn-Off Fall Time			8		nS
$Q_g$	Total Gate Charge	$V_{DS}=-10V, I_D=-2A,$ $V_{GS}=-4.5V$		3.9		nC
$Q_{gs}$	Gate-Source Charge			0.7		nC
$Q_{gd}$	Gate-Drain Charge			0.9		nC
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=-1A$		0.72	1.4	V
$R_g$	Gate resistance	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$		5		$\Omega$

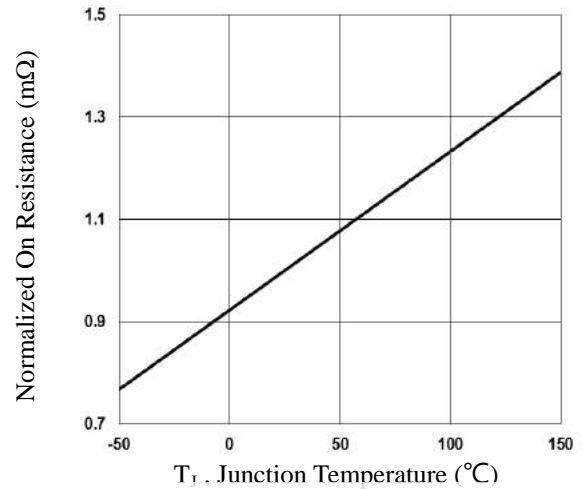
Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width  $\cong 300\mu s$  , duty cycle  $\cong 2\%$ .
3. Essentially independent of operating temperature.

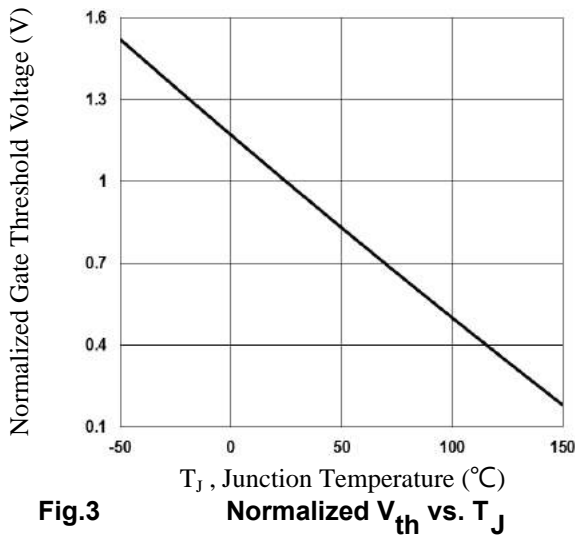
## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



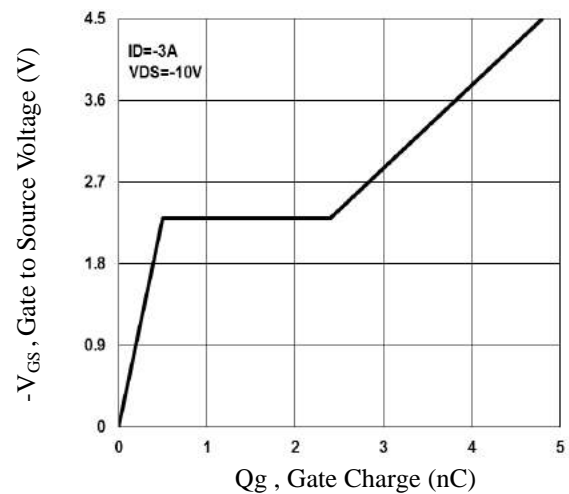
**Fig.1 Continuous Drain Current vs.  $T_c$**



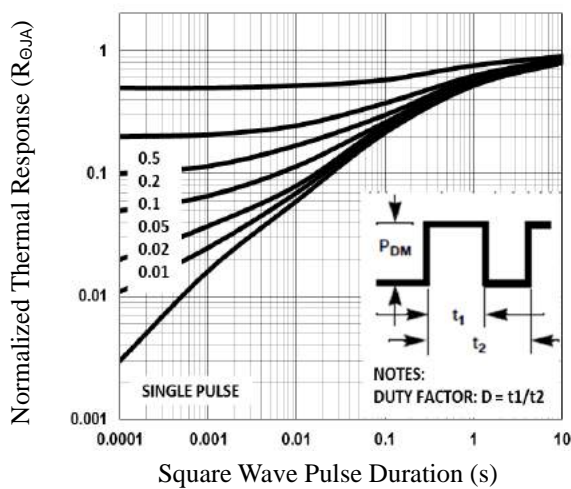
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_j$**



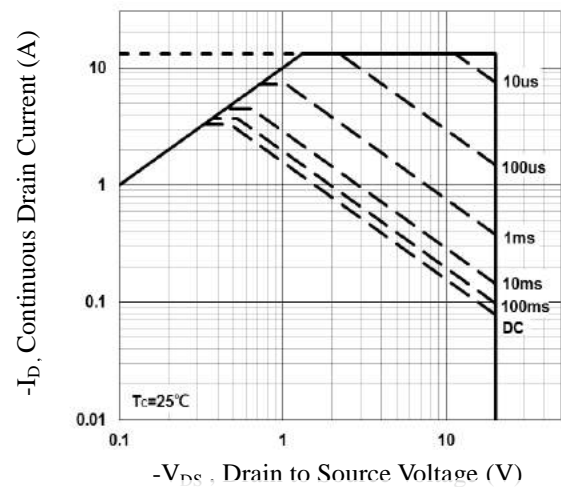
**Fig.3 Normalized  $V_{th}$  vs.  $T_j$**



**Fig.4 Gate Charge Waveform**

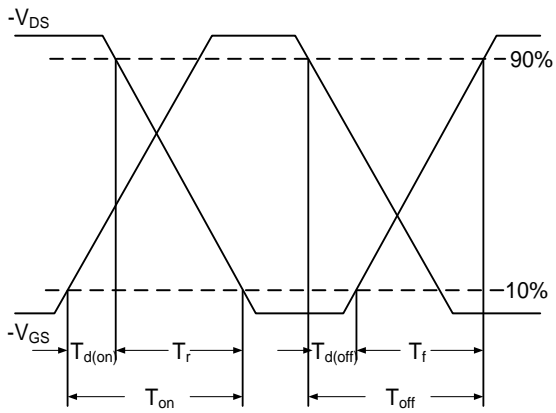


**Fig.5 Normalized Transient Impedance**

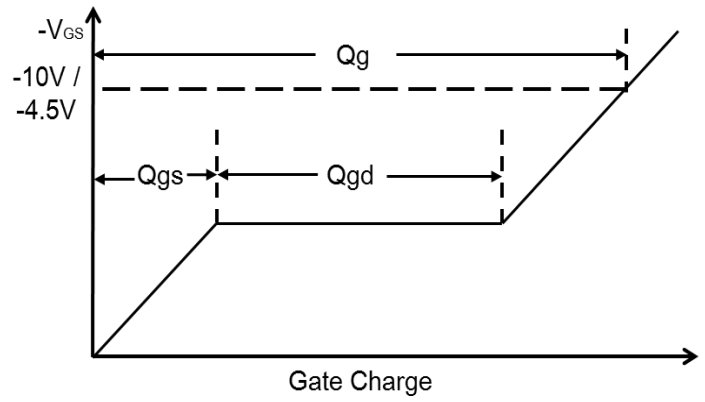


**Fig.6 Maximum Safe Operation Area**

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

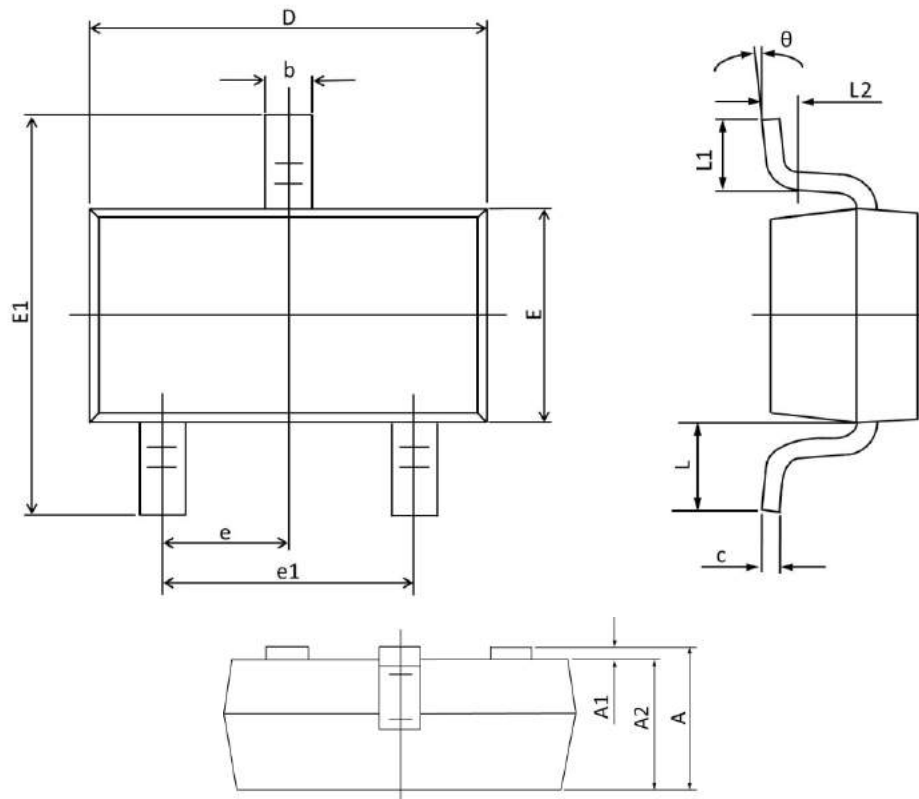


**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

## SOT23 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Max	Min	Max	Min
A	1.150	0.900	0.045	0.035
A1	0.100	0.000	0.004	0.000
A2	1.050	0.900	0.041	0.035
b	0.500	0.300	0.020	0.012
c	0.150	0.080	0.006	0.003
D	3.000	2.800	0.118	0.110
E	1.400	1.200	0.055	0.047
E1	2.550	2.250	0.100	0.089
e	0.95 TYP.		0.037 TYP.	
e1	2.000	1.800	0.079	0.071
L	0.55 REF.		0.022 REF.	
L1	0.500	0.300	0.020	0.012
L2	0.25 TYP.		0.01 TYP.	
$\theta$	8°	0°	8°	0°

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