



General Description

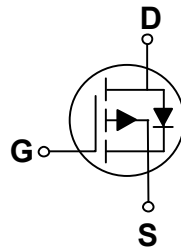
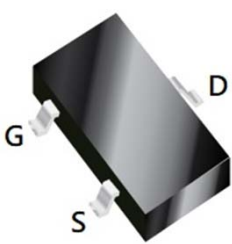
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV_{DSS}	$R_{DS(ON)}$	I_D
-30 V	55 m Ω	-4.1 A

Features

- $R_{DS(ON)} \leq 55m\Omega @ V_{GS} = -10V$
- Exceptional On-Resistance and Maximum DC Current Capability
- Super High Density Cell Design for Extremely Low $R_{DS(ON)}$

SOT-23 Pin Configuration



Applications

- Portable equipment
- Battery Powered System
- Power Management in Note
- Load Switch

Absolute Maximum Ratings $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous ($T_A=25^\circ\text{C}$)	-4.1	A
I_{DM}	Drain Current - Pulsed	-16.4	A
P_D	Power Dissipation ($T_A=25^\circ\text{C}$)	1.56	W
T_J	Operating Junction Temperature Range	-50 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	80	$^\circ\text{C/W}$

**Electrical Characteristics (T_J=25°C, unless otherwise noted)****Off Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V , I _D = -250uA	-30	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} = -30V , V _{GS} = 0V	---	---	-1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} = 0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = -10V , I _D = -3A	---	---	55	mΩ
		V _{GS} = -4.5V , I _D = -2A	---	---	85	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D = -250uA	-1.0	---	-2.5	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DS} = -15V , V _{GS} = -4.5V , I _D = -3A (NOTE 2)	---	5.1	---	nC
Q _{gs}	Gate-Source Charge		---	2.0	---	
Q _{gd}	Gate-Drain Charge		---	2.2	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} = -15V , V _{GS} = -10V , R _G = 6Ω , I _D = -1A (NOTE 2)	---	8.7	---	nS
T _r	Rise Time		---	35.9	---	
T _{d(off)}	Turn-Off Delay Time		---	23	---	
T _f	Fall Time		---	8.5	---	
C _{ISS}	Input Capacitance	V _{DS} = -15V , V _{GS} = 0V , F= 1MHz	---	545	---	pF
C _{OSS}	Output Capacitance		---	62.5	---	
C _{ISS}	Reverse Transfer Capacitance		---	48	---	

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Current	V _G =V _D =0V , Force Current	---	---	-4.1	A
V _{SD}	Diode Forward Voltage (NOTE 1)	V _{GS} = 0V , I _S = -1A	---	---	-1.2	V

NOTES :

1. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
2. Independent of operating temperature.
3. Pulsed width limited by maximum junction temperature.



Characteristics Curves

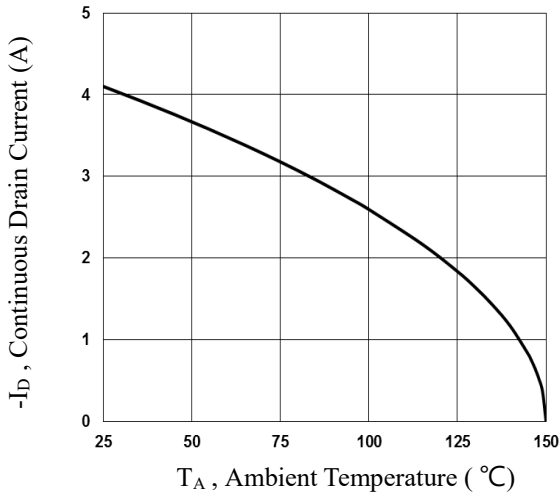


Fig.1 Continuous Drain Current vs. T_c

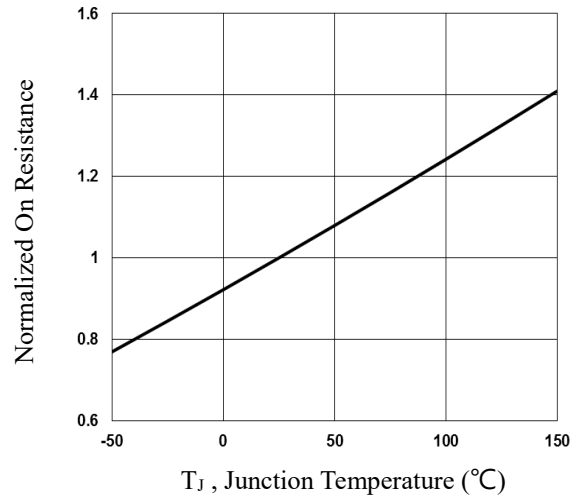


Fig.2 Normalized R_{DS(on)} vs. T_J

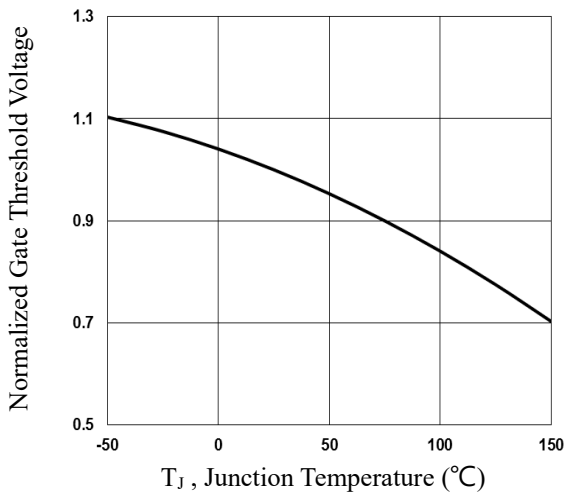


Fig.3 Normalized V_{th} vs. T_J

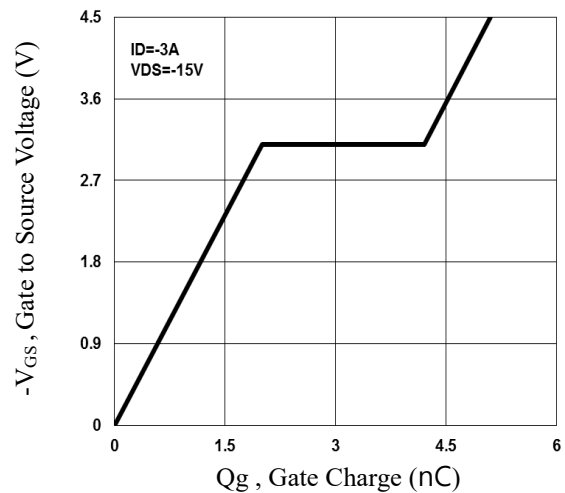


Fig.4 Gate Charge Waveform

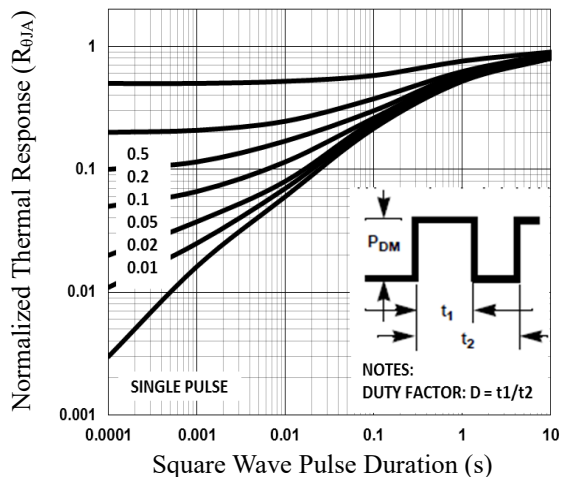


Fig.5 Normalized Transient Impedance

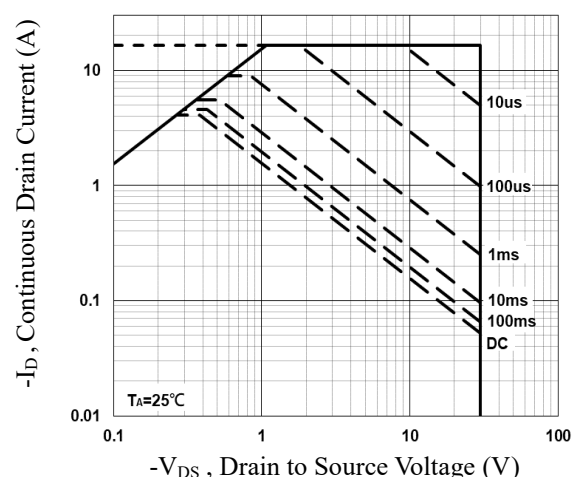


Fig.6 Maximum Safe Operation Area



Characteristics Curves

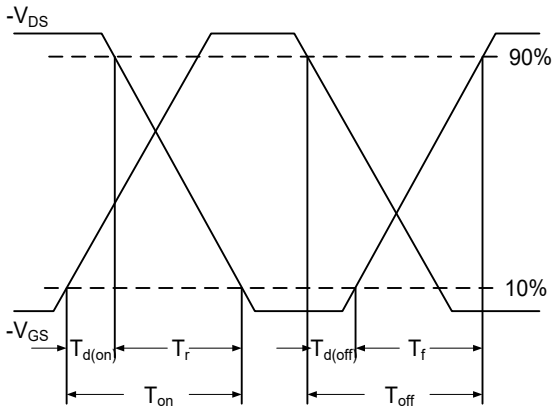


Fig.7 Switching Time Waveform

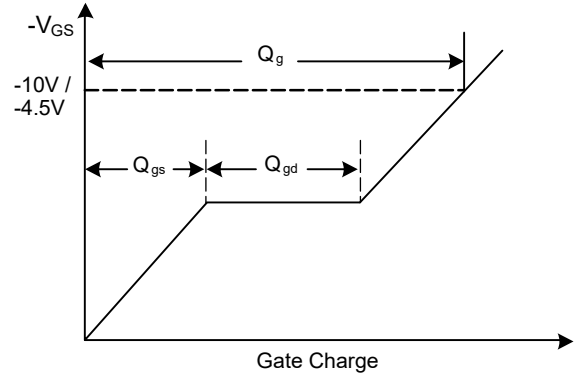
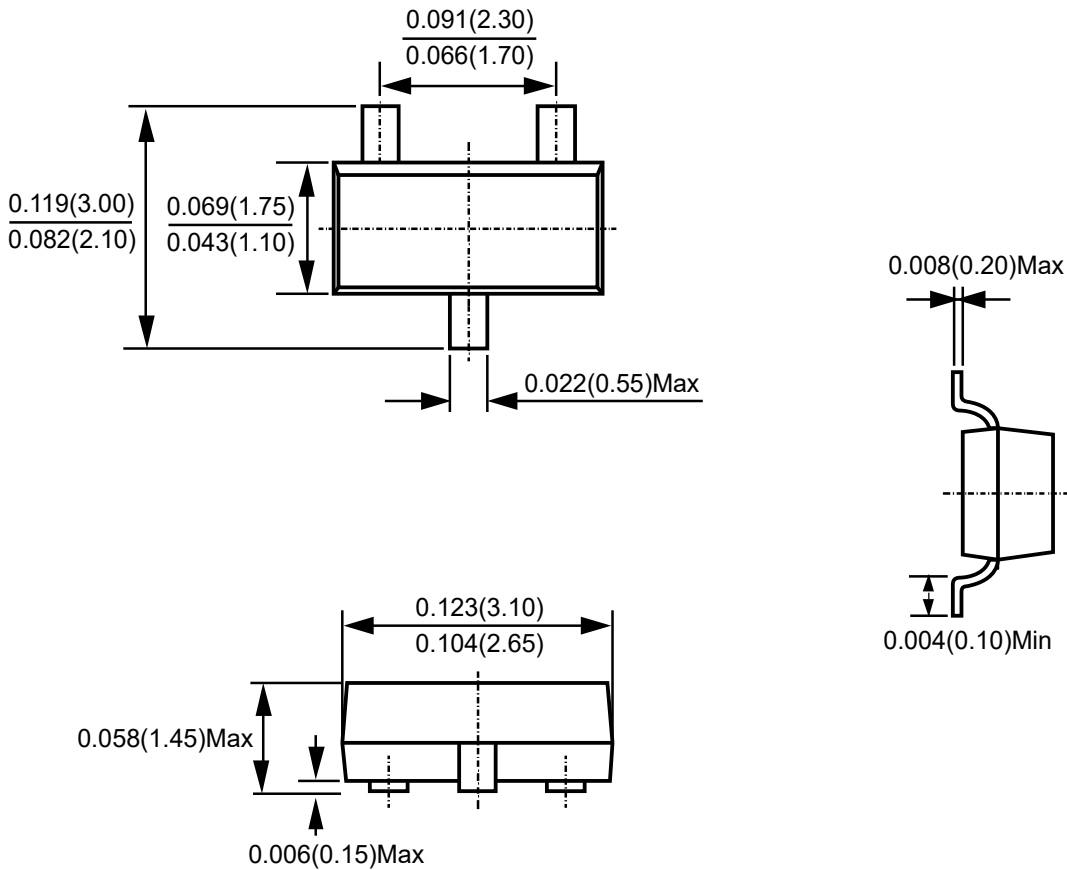


Fig.8 Gate Charge Waveform

Package Outline Dimensions



SOT-23

Dimensions in inches and (millimeters)



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