



**100V P-Channel MOSFETs**

**General Description**

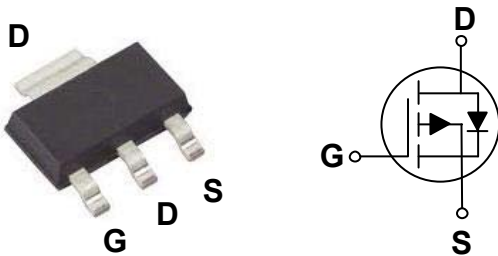
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

<b>BV<sub>DSS</sub></b>	<b>R<sub>DS(ON)</sub></b>	<b>I<sub>D</sub></b>
-100 V	300 mΩ	-8.2 A

**Features**

- $R_{DS(ON)} \leq 300m\Omega @ V_{GS} = -10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available

SOT-223 Pin Configuration



**Applications**

- Brushless Motor
- Load Switch
- Uninterruptible Power Supply

**Absolute Maximum Ratings  $T_C=25^\circ C$  unless otherwise noted**

<b>Symbol</b>	<b>Parameter</b>	<b>Rating</b>	<b>Units</b>
$V_{DS}$	Drain-Source Voltage	-100	V
$V_{GS}$	Gate-Source Voltage	±20	V
$I_D$	Drain Current - Continuous ( $T_C=25^\circ C$ )	-8.2	A
$I_{DM}$	Drain Current - Pulsed (NOTE 1)	-24.8	A
$P_D$	Power Dissipation ( $T_C=25^\circ C$ )	21.3	W
$T_J$	Operating Junction Temperature Range	-55 to 150	°C
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
Marking Code		PM300	

**Thermal Characteristics**

<b>Symbol</b>	<b>Parameter</b>	<b>Rating</b>	<b>Unit</b>
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	5.87	°C/W

**Electrical Characteristics ( $T_J=25^\circ\text{C}$ , unless otherwise noted)****Off Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu\text{A}$	-100	---	---	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=-100V, V_{GS}=0V$	---	---	-1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA

**On Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-5A$	---	---	300	m $\Omega$
		$V_{GS}=-4.5V, I_D=-3A$	---	---	340	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu\text{A}$	-1.2	---	-2.5	V

**Dynamic and switching Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$Q_g$	Total Gate Charge	$V_{DD}=-50V, V_{GS}=-10V, I_D=-5A$	---	11.5	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.3	---	
$Q_{gd}$	Gate-Drain Charge		---	2.9	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=-50V, V_{GEN}=-10V, R_G=4.5\Omega, R_L=25\Omega, I_D=-5A$	---	12	---	nS
$T_r$	Rise Time		---	5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	35	---	
$T_f$	Fall Time		---	20	---	
$C_{ISS}$	Input Capacitance	$V_{DS}=-50V, V_{GS}=0V, F=1\text{MHz}$	---	760	---	pF
$C_{OSS}$	Output Capacitance		---	25	---	
$C_{RSS}$	Reverse Transfer Capacitance		---	12	---	

**Drain-Source Diode Characteristics and Ratings**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	-8.2	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=-1A$	---	---	-1.3	V
$t_{rr}$	Reverse Recovery Time	$V_{GS}=0V, I_S=-3A, di/dt=100\text{A}/\mu\text{s}$	---	25	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	20	---	nC

## NOTES :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
3. The data is theoretically the same as  $I_D$  and  $I_{DM}$ , in real applications, should be limited by total power dissipation.



Characteristics Curves

FIG. 1- $I_D$  vs.  $T_C$

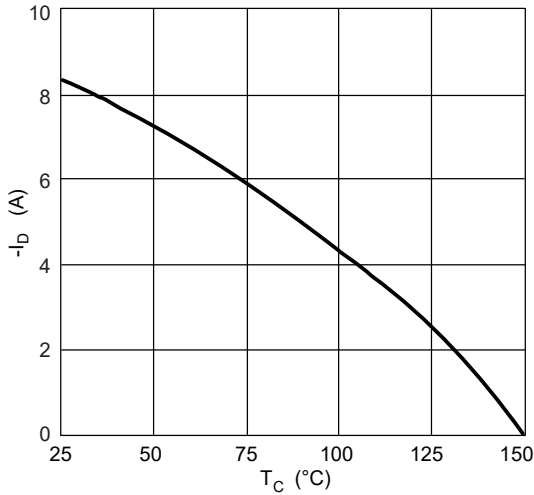


FIG. 2- $R_{DS(ON)}$  vs.  $I_D$

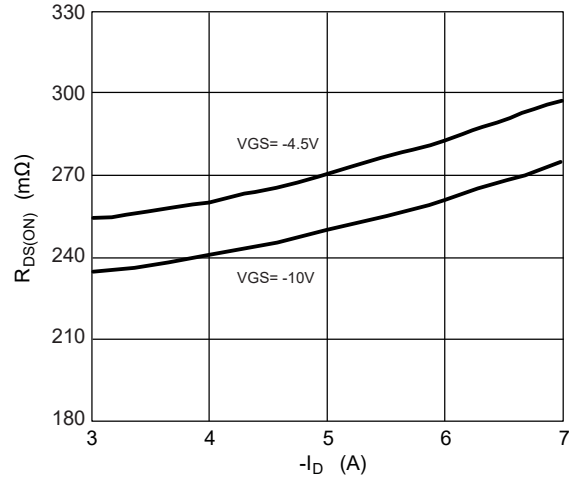


FIG. 3-Normalized  $V_{GS(th)}$  vs.  $T_J$

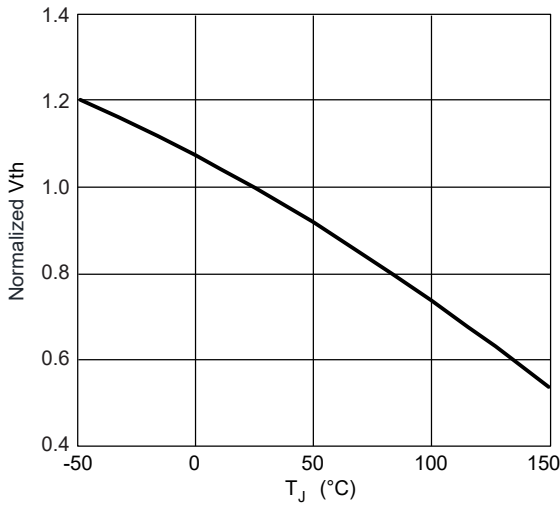


FIG. 4-Normalized  $R_{DS(ON)}$  vs.  $T_J$

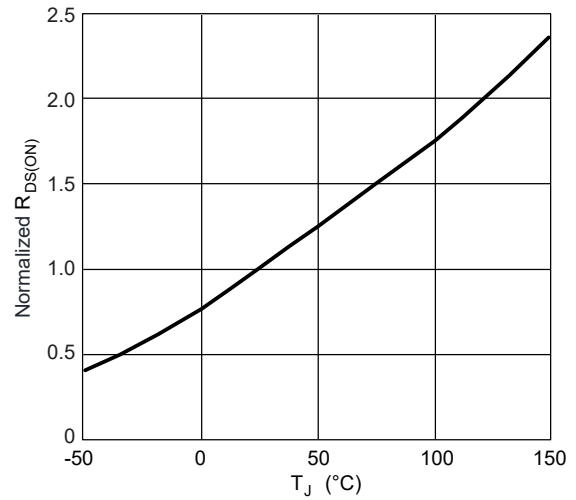


FIG. 5-Switching Time Waveform

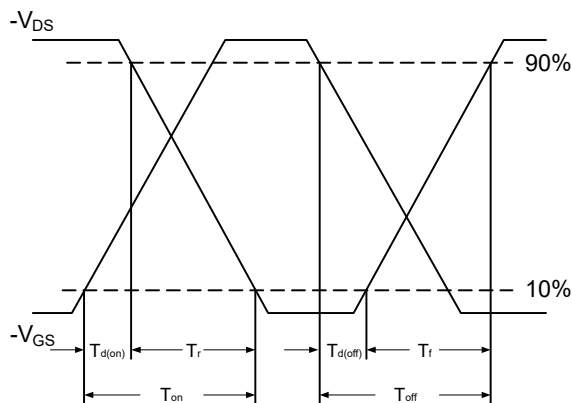
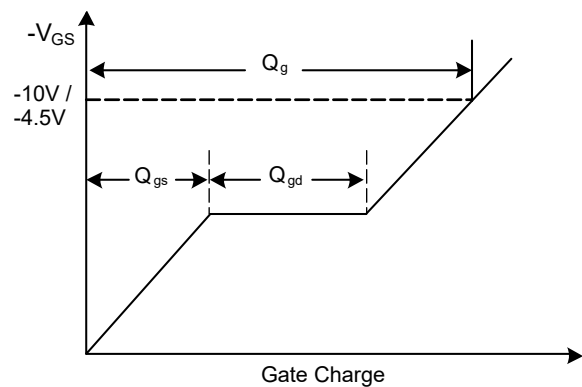
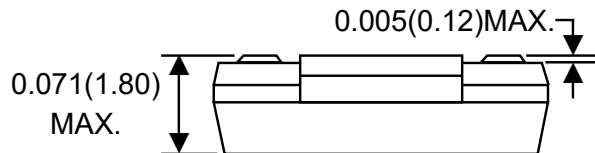
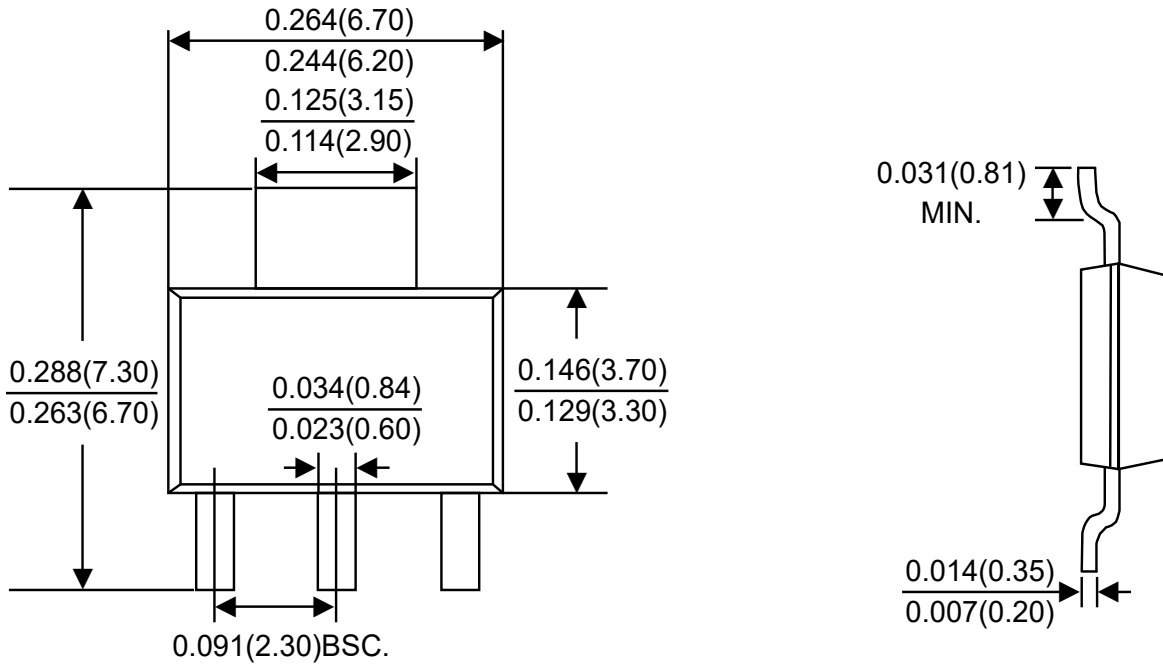


FIG. 6-Gate Charge Waveform





Package Outline Dimensions



SOT-223

Dimensions in inches and (millimeters)



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