TPMNF16H

55V N-Channel MOSFETs

BV_{DSS}	$R_{DS(ON)}$	I_D
55 V	1.6 Ω	320 mA

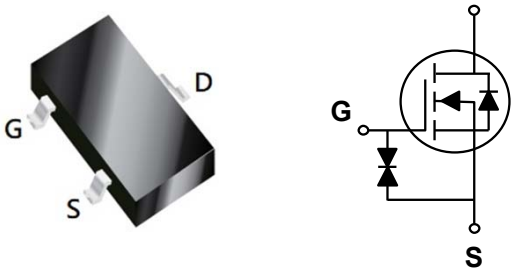
General Description

These N-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

- $R_{DS(ON)} \leqq 1.6\Omega @ V_{GS}=10V$
- Improved dv/dt Capability
- Fast Switching
- Green Device Available
- ESD Protected

SOT-323 Pin Configuration



Applications

- Notebook
- Load Switch
- Battery Protection
- Hand-Held Instruments

Absolute Maximum Ratings T_A=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	55	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current - Continuous	320	mA
I_{DM}	Drain Current - Pulsed (NOTE 1)	1800	mA
P_D	Power Dissipation (T_A=25°C)	300	mW
T_J	Operating Junction Temperature Range	-50 to 150	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	417	°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	55	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=55V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±10	uA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=300mA	---	---	1.6	Ω
		V_{GS}=4.5V , I_D=200mA	---	---	2.5	
		V_{GS}=2.5V , I_D=100mA	---	---	4.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	0.8	---	1.5	V
gfs	Forward Transconductance	V_{DS}=10V , I_D=250mA	---	400	---	mS

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge	V_{DS}=15V , V_{GS}=5V , I_D=200mA	---	---	1	nC
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V , V_{GS}=10V , R_L=150Ω , R_G=10Ω , I_D=200mA	---	1.3	---	nS
$T_{d(off)}$	Turn-Off Delay Time		---	5.5	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , F=1MHz	---	---	50	pF
C_{oss}	Output Capacitance		---	7	---	
C_{rss}	Reverse Transfer Capacitance		---	4	---	

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	---	---	320	mA
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=320mA	---	---	1.2	V
T_{rr}	Reverse Recovery Time	V_{GS}=0V , V_{DD}=30V , I_S=1A , dIs/dt=100A/us	---	14.4	---	nS
Q_{rr}	Reverse Recovery Charge		---	5.8	---	nC

NOTES：

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

Characteristics Curves

FIG. 1-Output Characteristic

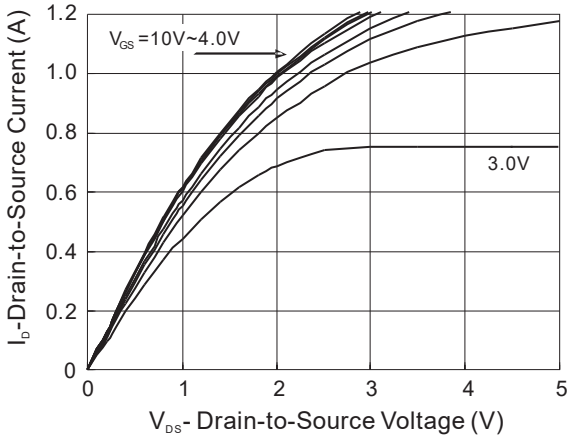


FIG. 2-Transfer Characteristic

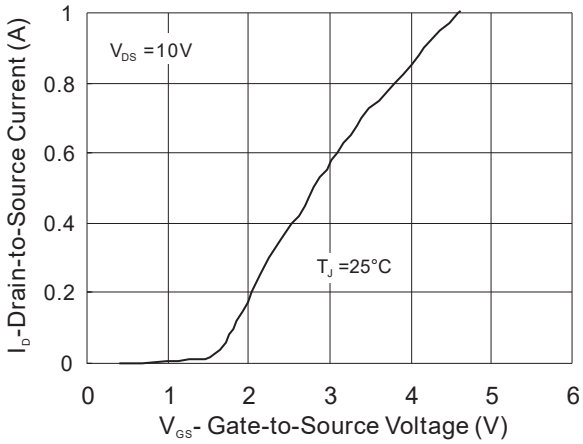


FIG. 3-On-Resistance vs Drain Current

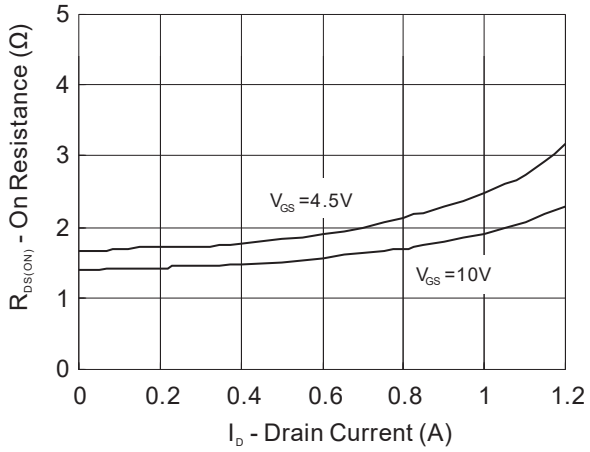


FIG. 4-On-Resistance vs Gate to Source Voltage

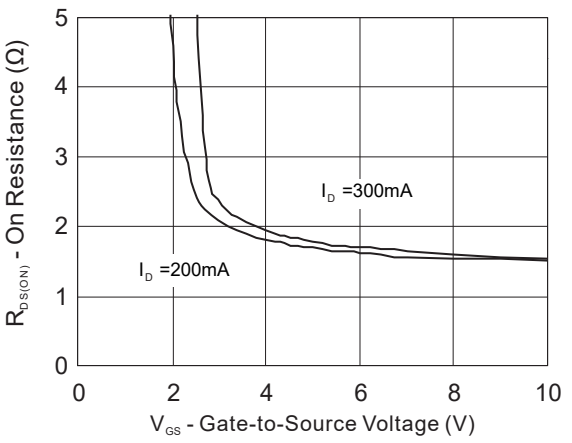


FIG. 5-On-Resistance vs Junction Temperature

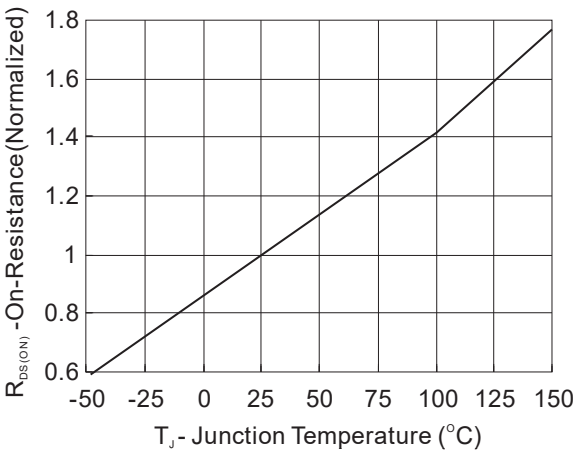
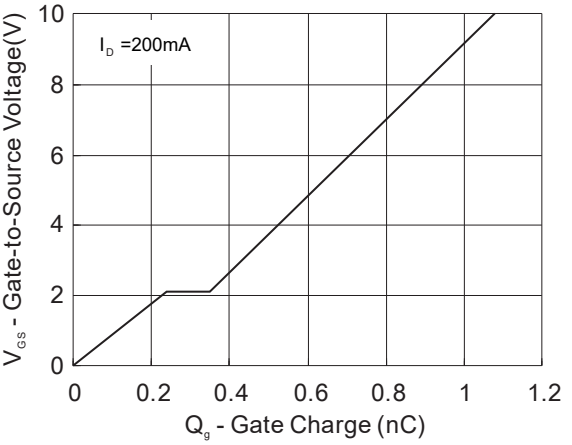


FIG. 6-Gate Charge Waveform



Characteristics Curves

FIG. 7-Source-Drain Diode Forward Voltage

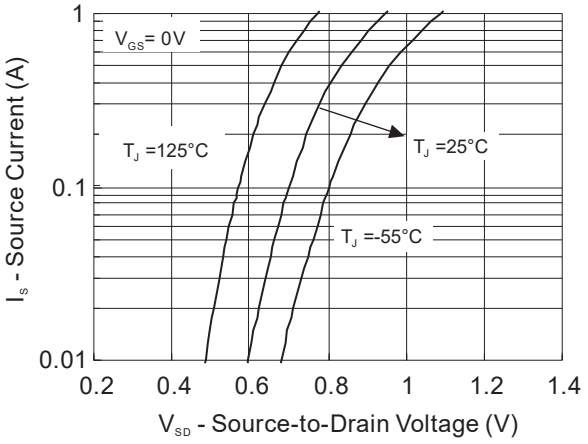


FIG. 8-Threshold Voltage vs Temperature

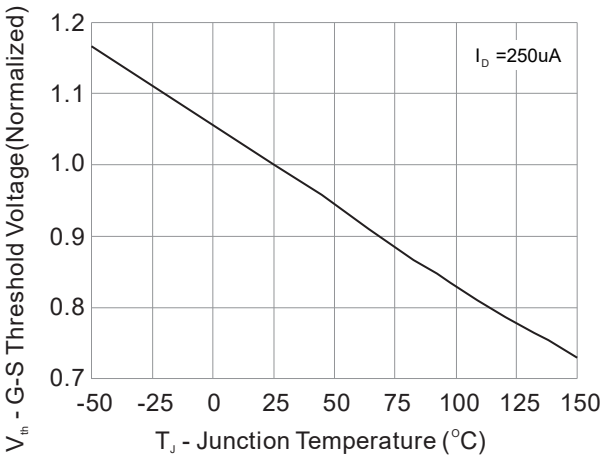
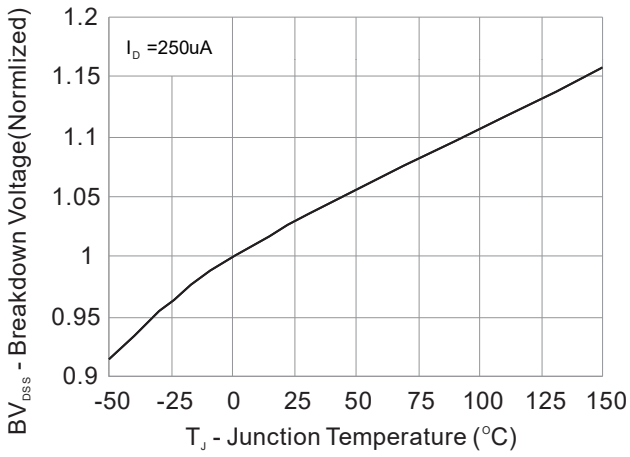
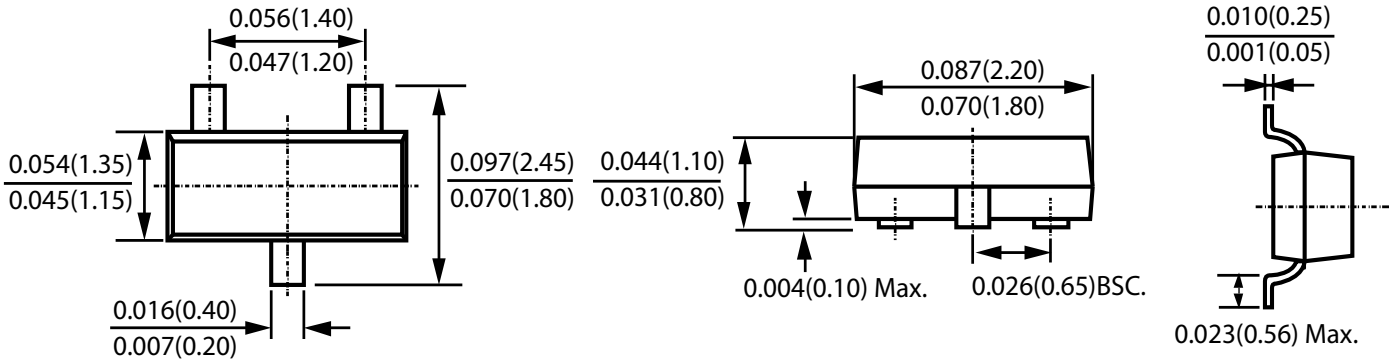


FIG. 9-Breakdown Voltage vs Junction Temperature



Package Outline Dimensions



SOT-323

Dimensions in inches and (millimeters)

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