TRMNF16H

55V N-Channel MOSFETs

Pb | RoHS

| BV_{DSS}	$R_{DS(ON)}$	I_D
55 V	1.6 Ω	300 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

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

SOT-723 Pin Configuration
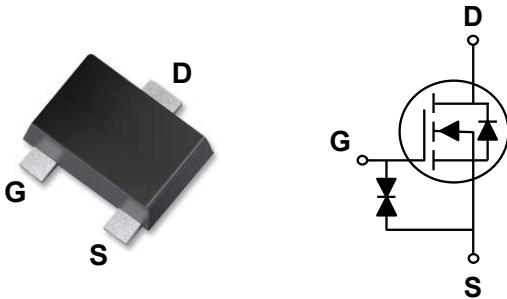
Applications

· 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	300	mA
I_{DM}	Drain Current - Pulsed (NOTE 1)	1690	mA
P_D	Power Dissipation (T_A=25°C)	297	mW
T_J	Operating Junction Temperature Range	-50 to 150	^{o}C
T_{STG}	Storage Temperature Range	-50 to 150	^{o}C

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$	Thermal Resistance Junction to Ambient	420	^{o}C/W

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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$_D$=250mA	---	---	1.6	Ω
		V$_{GS}$=4.5V , I$_D$=150mA	---	---	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	---	---	300	mA
V$_{SD}$	Diode Forward Voltage	V$_{GS}$=0V , I$_S$=300mA	---	---	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.

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Characteristics Curves
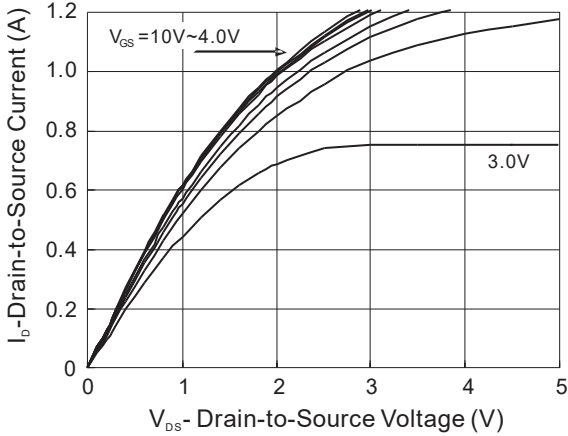
FIG. 1-Output Characteristic
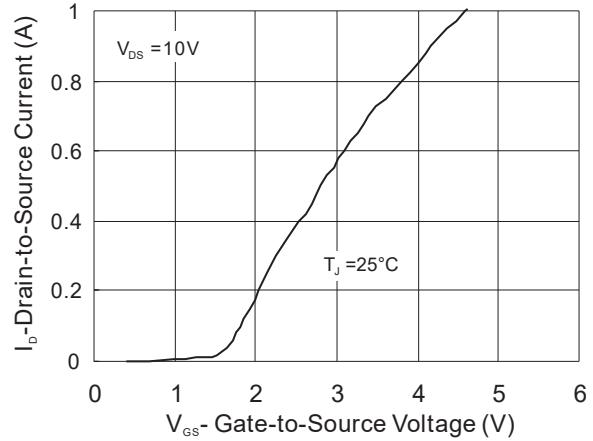

FIG. 2-Transfer Characteristic
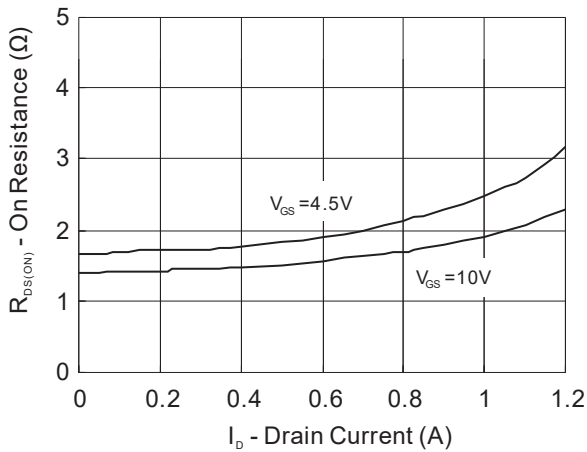

FIG. 3-On-Resistance vs Drain Current

FIG. 4-Gate Charge Waveform
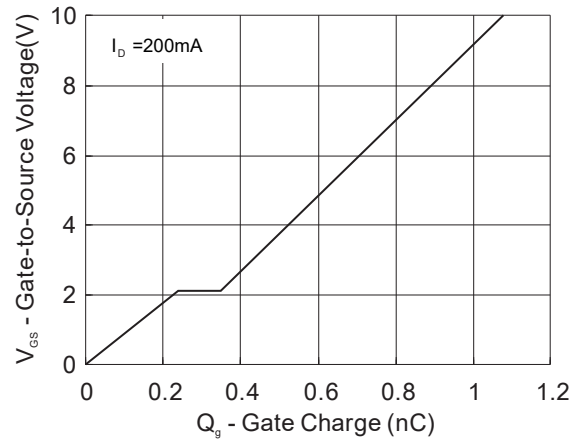
FIG. 5-On-Resistance vs Junction Temperature

FIG. 6-Breakdown Voltage vs Junction Temperature
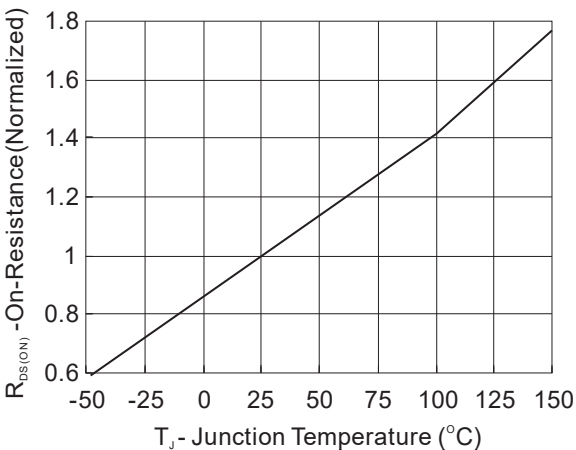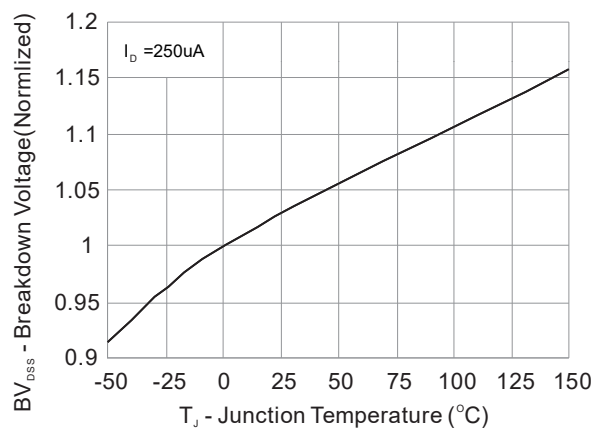
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Characteristics Curves

FIG. 7-Source-Drain Diode Forward Voltage
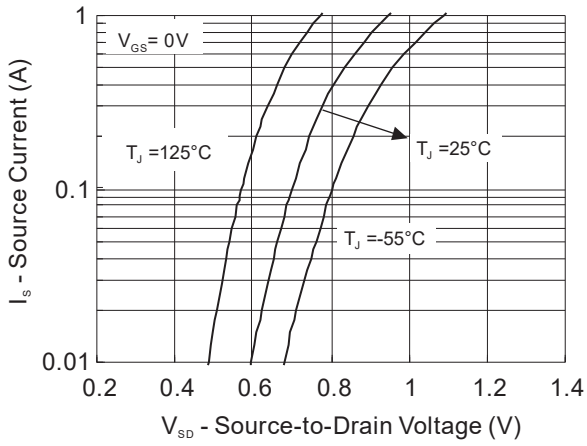
FIG. 8-Threshold Voltage vs Temperature
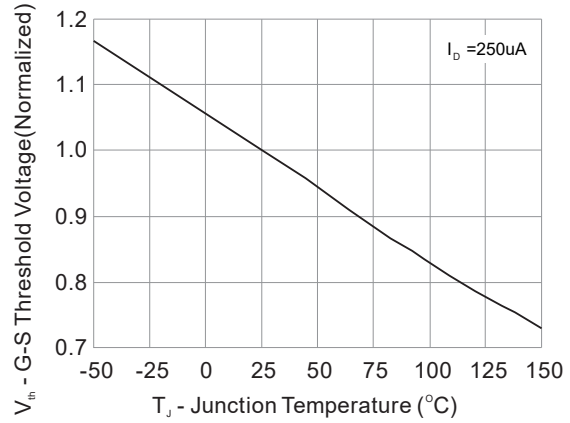
Package Outline Dimensions

0.050(1.25)
0.045(1.15)

0.015(0.37)
0.006(0.17)

0.050(1.25)
0.045(1.15)

0.034(0.85)
0.029(0.75)

0.020(0.50)
0.014(0.37)

0.006(0.15)
Max.

0.002(0.05)Max

0.032(0.80)
Typ
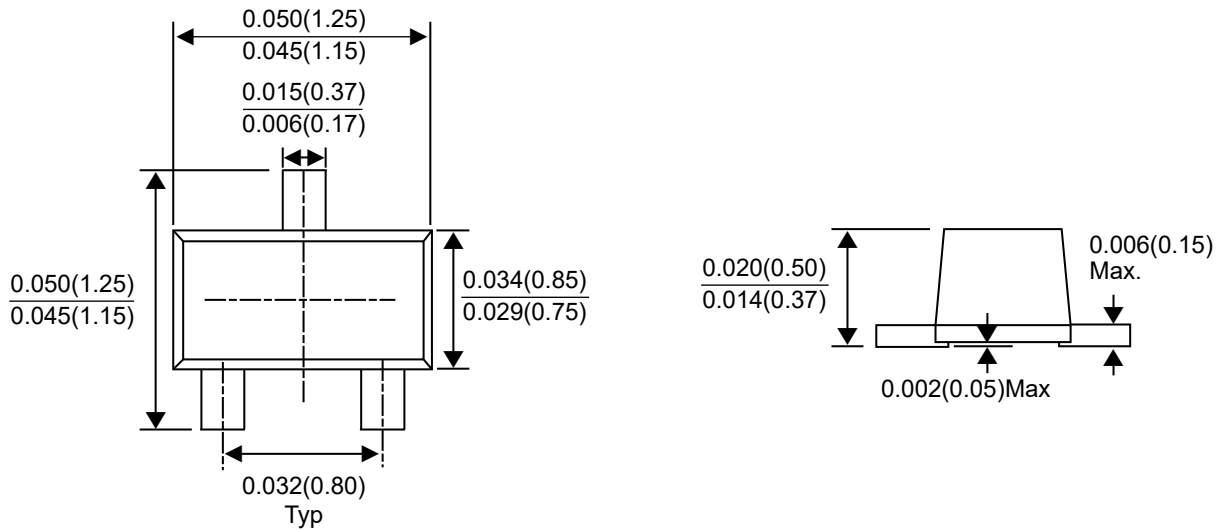
SOT-723

Dimensions in inches and (millimeters)

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