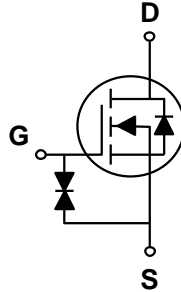
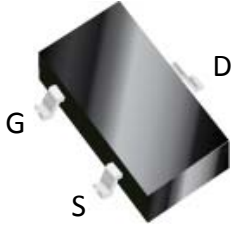




# TNMNF30H



## 50V N-Channel MOSFETs



$BV_{DSS}$	$R_{DS(ON)}$	$I_D$
50 V	3 $\Omega$	300 mA

### SOT-23

#### Features

- 50V, 0.3A,  $R_{DS(ON)}=3\Omega @V_{GS}=10V$
- ESD Protected
- Fast switching
- Green Device Available

#### Applications

- Case : SOT-23
- Load Switch
- Hand-Held Instruments

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

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	50	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current - Continuous	300	mA
$I_{DM}$	Drain Current - Pulsed (NOTE 1)	2000	mA
$P_D$	Power Dissipation ( $T_A=25^\circ C$ )	350	mW
$T_J$	Operating Junction Temperature Range	-50 to 150	$^\circ C$
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ C$
Marking Code		SS	

#### Thermal Characteristics

Symbol	Parameter	Typ.	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	357	$^\circ C/W$



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

#### Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =10uA	50	---	---	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V	---	---	1	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±10	uA

#### On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =2.5V, I <sub>D</sub> =100mA	---	2.6	6	Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA	---	1.5	4	
		V <sub>GS</sub> =10V, I <sub>D</sub> =500mA	---	1.4	3	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	0.8	---	1.5	V
gfs	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =250mA	100	---	---	mS

#### Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =25V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =250mA	---	---	1	nC
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =30V, R <sub>L</sub> =100Ω, V <sub>GEN</sub> =10V, R <sub>G</sub> =6Ω, I <sub>D</sub> =300mA	---	---	40	ns
T <sub>d(off)</sub>	Turn-Off Delay Time		---	---	150	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, F=1MHz	---	---	50	pF
C <sub>oss</sub>	Output Capacitance		---	---	10	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	---	5	

#### Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	300	mA
I <sub>SM</sub>	Pulsed Source Current		---	---	2000	
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =250mA	---	0.94	1.2	V



### Characteristics Curves

FIG. 1-Output Characteristic

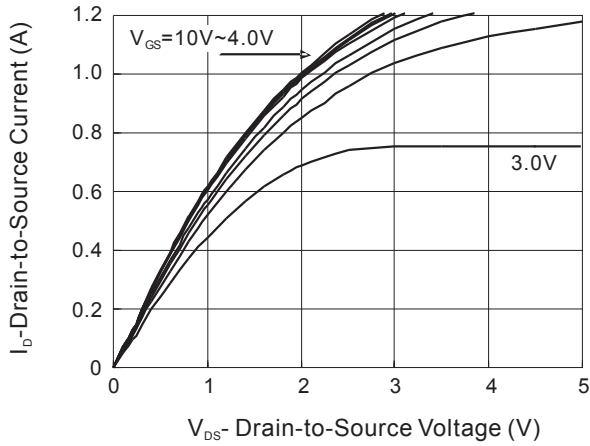


FIG. 2-Transfer Characteristic

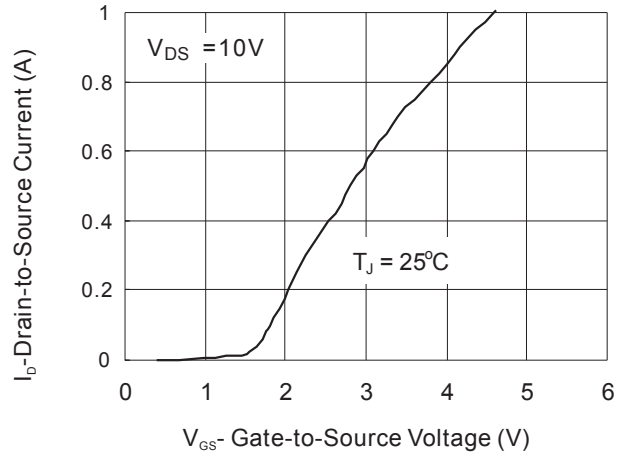


FIG. 3-On-Resistance vs Drain Current

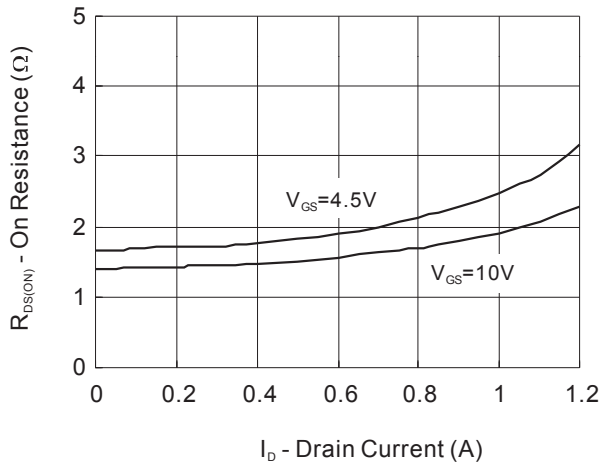


FIG. 4-On-Resistance vs Gate to Source Voltage

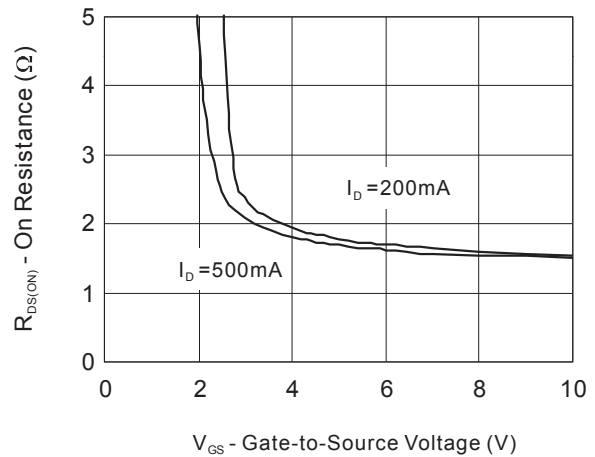


FIG. 5-On-Resistance vs Junction Temperature

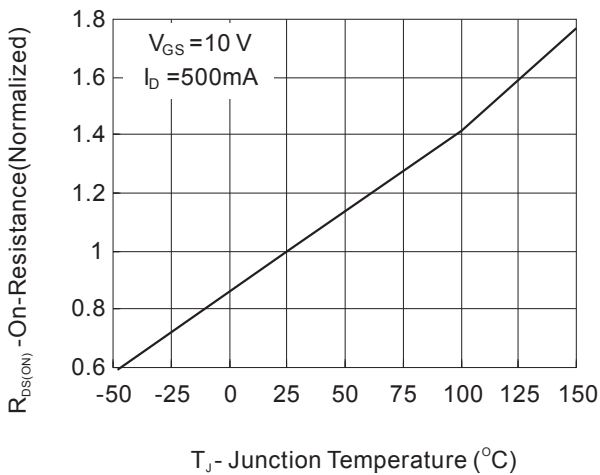
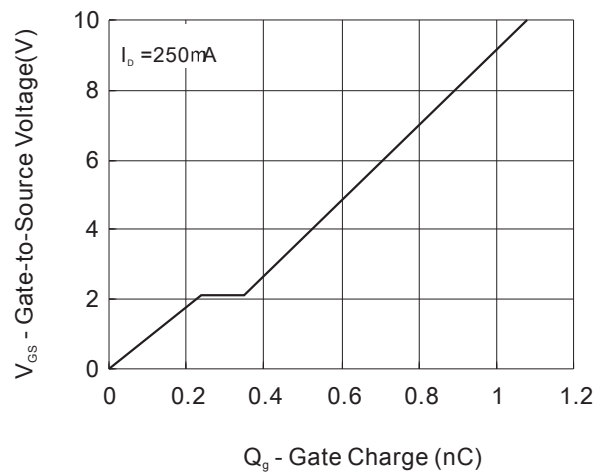


FIG. 6-Gate Charge Waveform





### Characteristics Curves

FIG. 7-Source-Drain Diode Forward Voltage

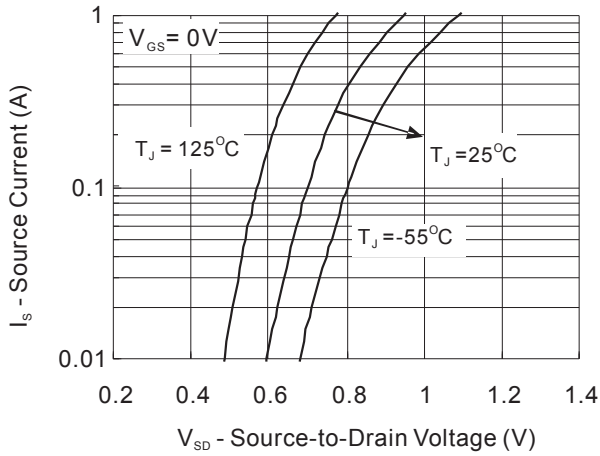


FIG. 8-Threshold Voltage vs Temperature

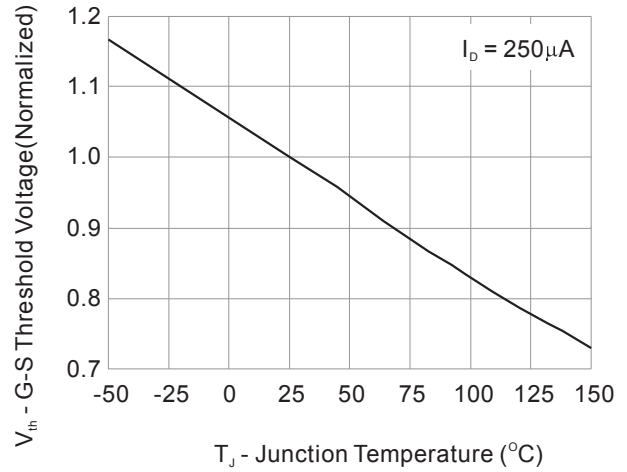
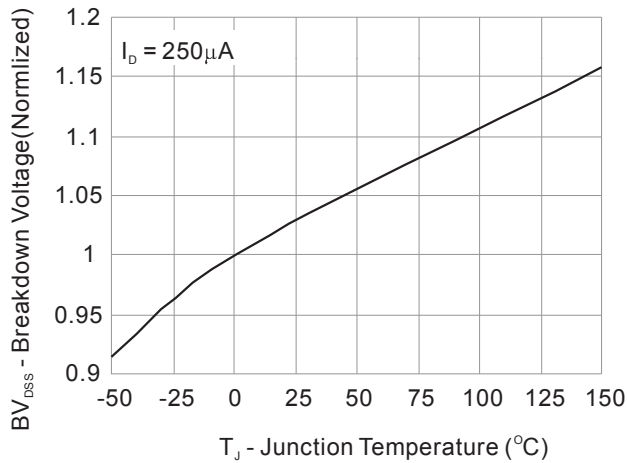
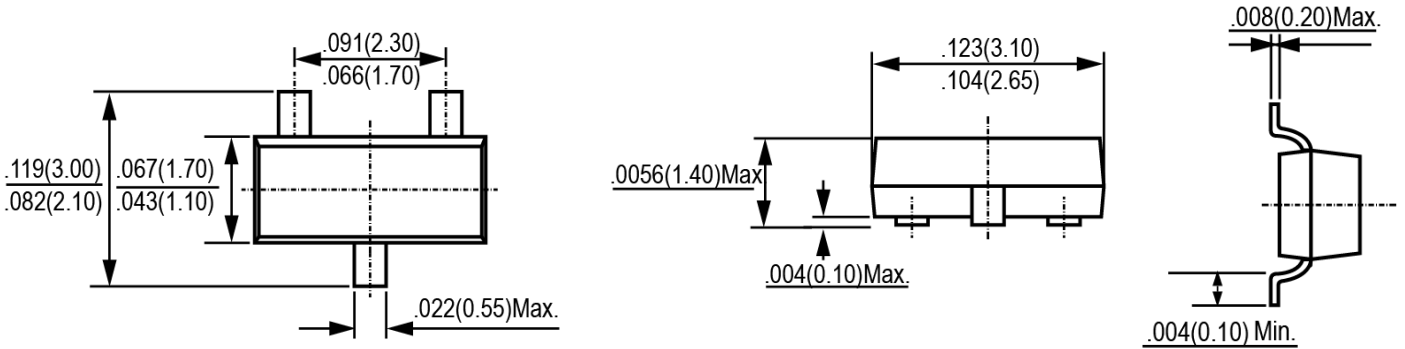


FIG. 9-Breakdown Voltage vs Junction Temperature





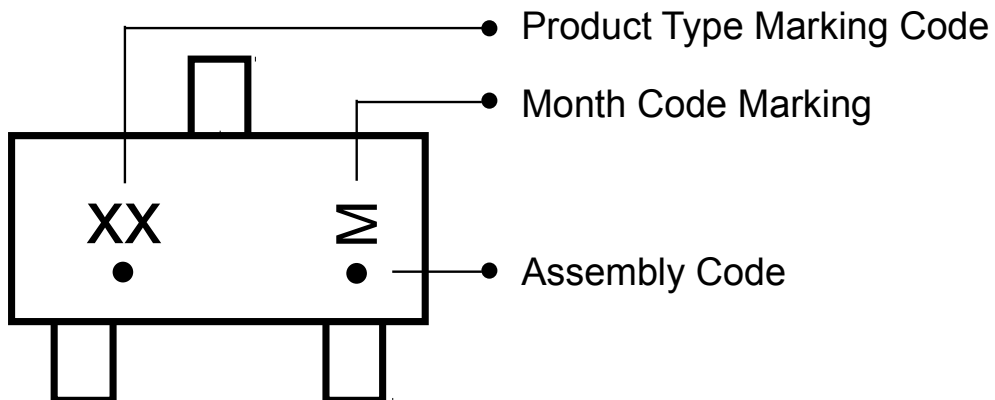
Package Outline Dimensions



SOT-23

Dimensions in inches and (millimeters)

Marking Information





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