

TN20N60TE

N-Channel Enhancement Mode Power MOSFET

TO-252

Product Summary

- $V_{DS} = 60V, I_D = 20A$
- $R_{DS(on)} < 33m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 45m\Omega @ V_{GS} = 4.5V$

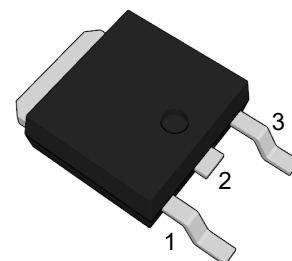
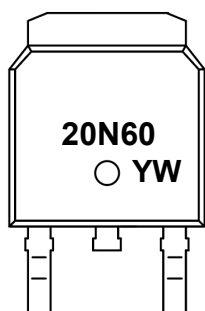
Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Application

- Load Switch
- PWM Application
- Power management

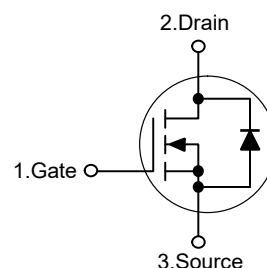
Marking Code



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	20	A
Drain Current-Pulsed ^{Note1}	I_{DM}	80	A
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	25	mJ
Maximum Power Dissipation	P_D	27.7	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.5	°C/W
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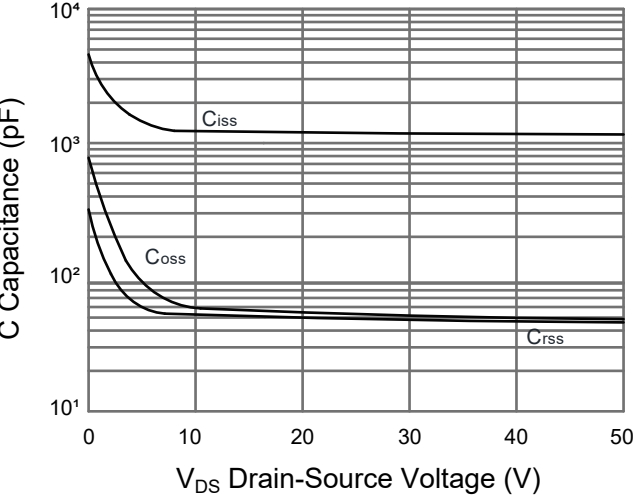
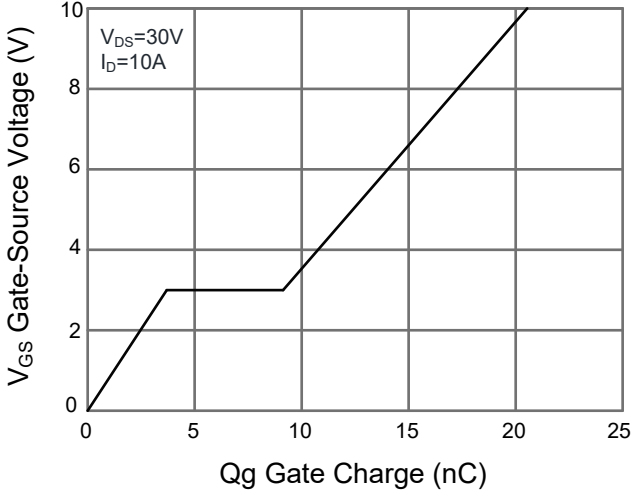
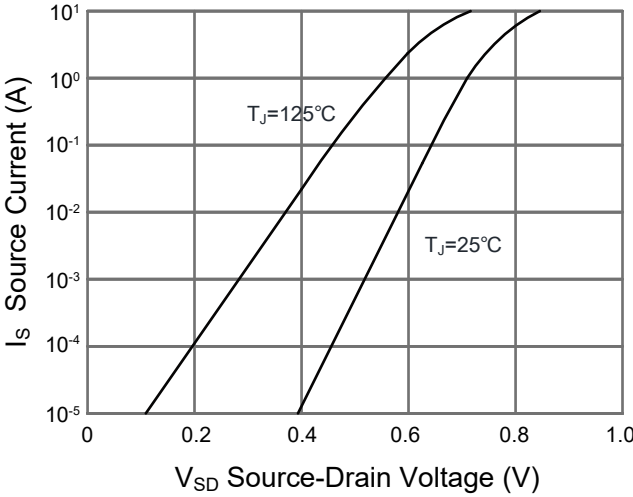
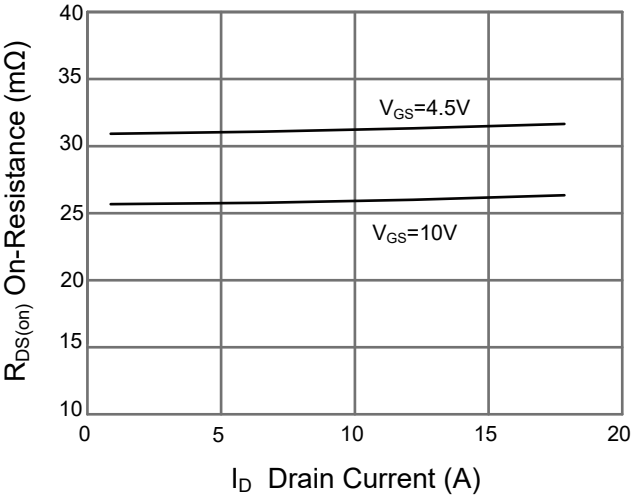
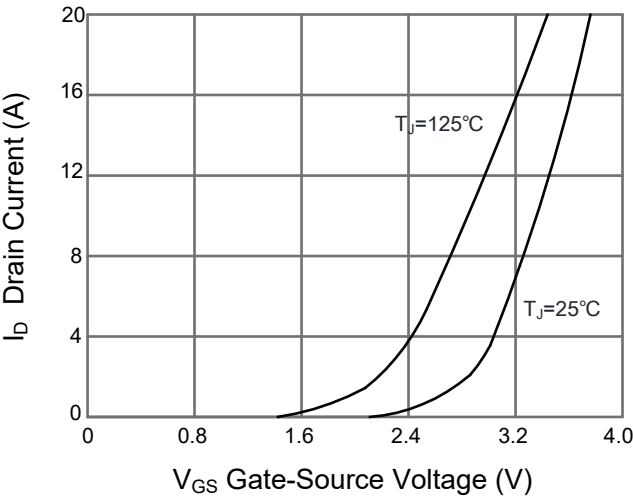
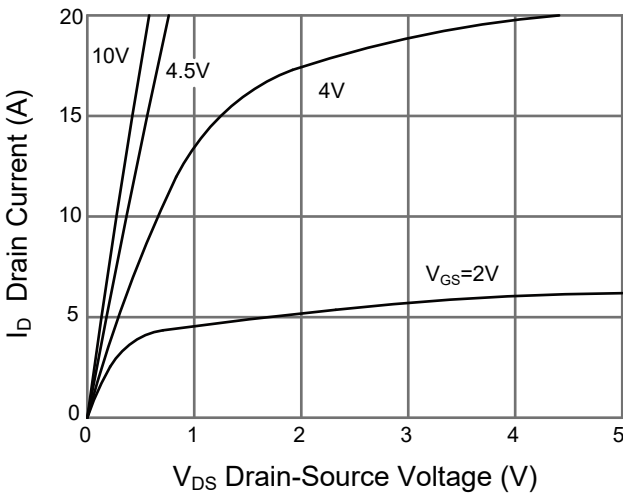
Electrical Characteristics

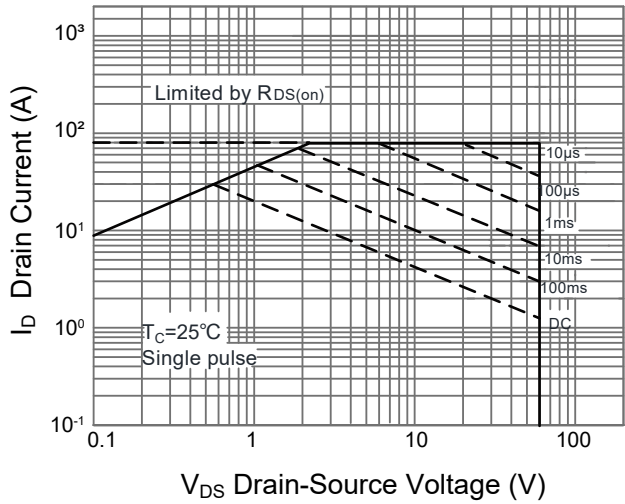
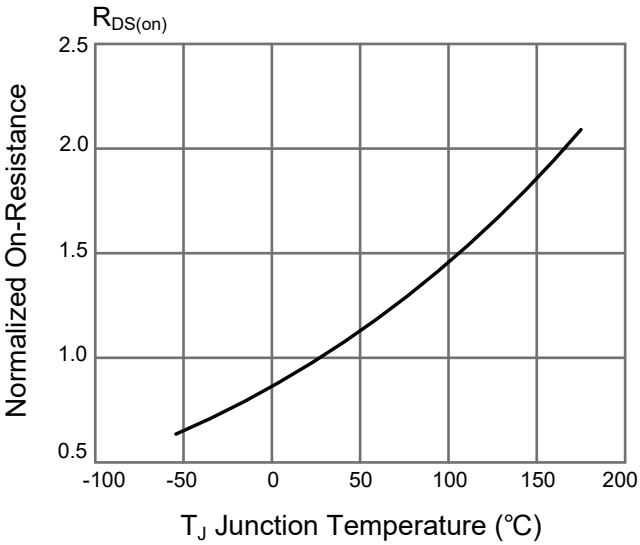
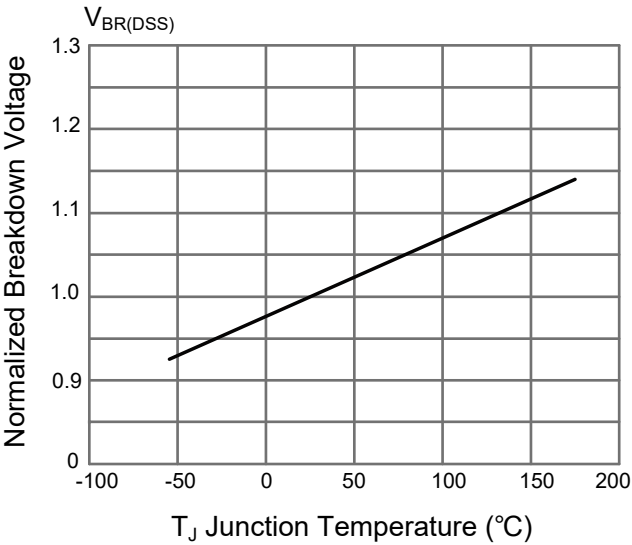
(T_J=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D =250μA	60	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V,V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	1	1.5	2.5	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V,I _D =10A	--	26	33	mΩ
		V _{GS} =4.5V,I _D =5A	--	31	45	mΩ
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V,I _D =3A	--	9	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V,V _{GS} =0V,f=1MHz	--	1180	--	pF
Output Capacitance	C _{oss}		--	56	--	pF
Reverse Transfer Capacitance	C _{rss}		--	50	--	pF
Gate Resistance	R _g	V _{DS} =0V,V _{GS} =0V,f=1MHz	--	1.6	--	Ω
Total Gate Charge	Q _g	V _{DS} =30V, I _D =10A, V _{GS} =10V	--	20.3	--	nC
Gate-Source Charge	Q _{gs}		--	3.7	--	nC
Gate-Drain Charge	Q _{gd}		--	5.3	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =20A, V _{GS} =10V, R _{GEN} =1.8Ω	--	7.6	--	nS
Turn-on Rise Time	t _r		--	20	--	nS
Turn-off Delay Time	t _{d(off)}		--	15	--	nS
Turn-off Fall Time	t _f		--	24	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =20A	--	--	1.2	V
Diode Forward Current	I _S		--	--	20	A

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=6.1A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristic Curves

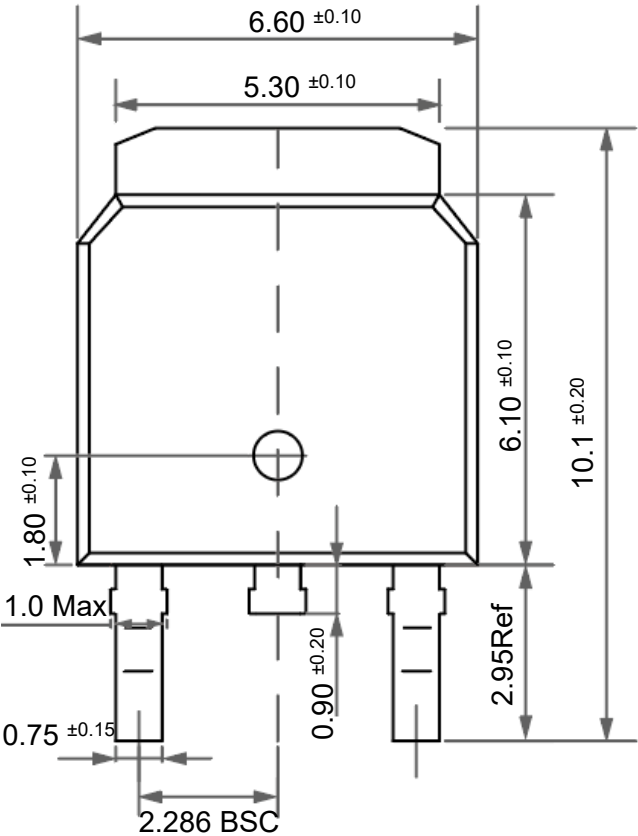




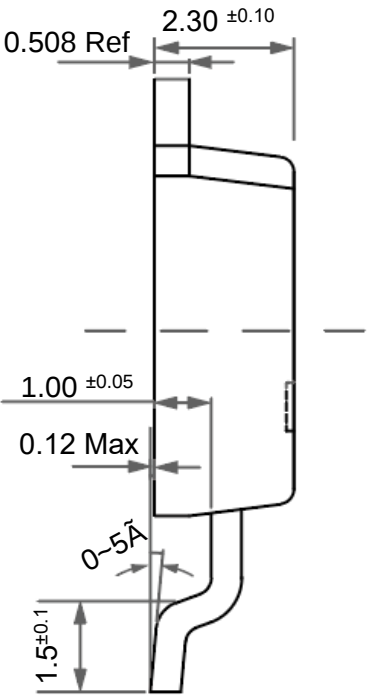
Package Outline

TO-252

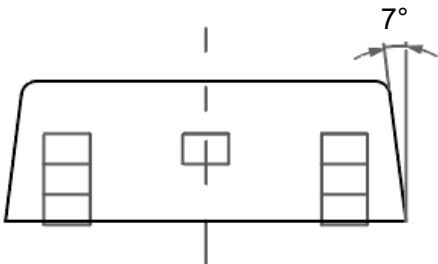
Dimensions in mm



Front View



Side View



Bottom View

Ordering Information

Device	Package	Shipping
TN20N60TE	TO-252	2,500PCS/Reel&13inches

Contact Information

TANI website: <http://www.tanisemi.com> Email: tani@tanisemi.com

For additional information, please contact your local Sales Representative.



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