

Product Summary

- $V_{DS} = 40V, I_D = 55A$
- $R_{DS(on)} < 9.8m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 12.5m\Omega @ V_{GS} = 4.5V$

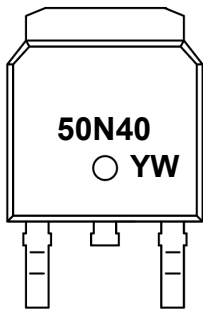
Features

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

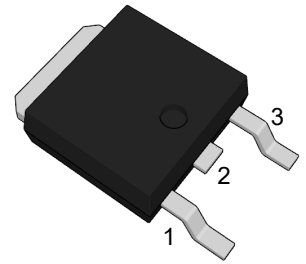
Application

- Load Switch
- PWM Application
- Power management

Marking Code



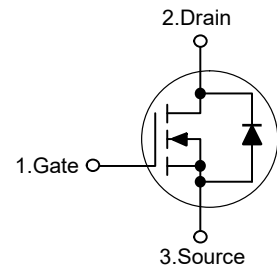
TO-252



(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}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	55	A
Drain Current-Pulsed ^{Note1}	I_{DM}	220	A
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	51	mJ
Maximum Power Dissipation	P_D	50	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.5	°C/W
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Electrical Characteristics

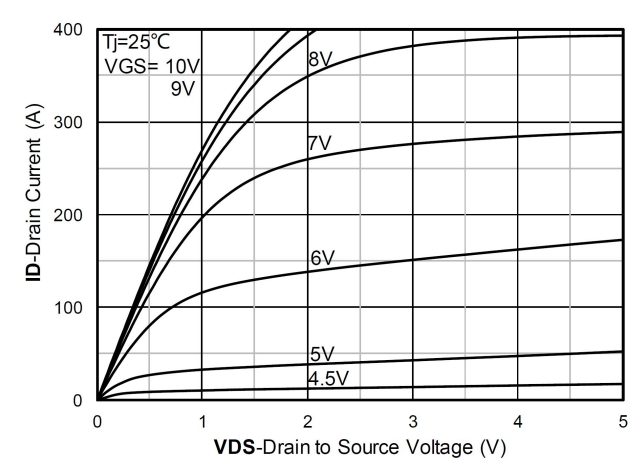
(T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250uA	40	-	-	V
Drain-Source Leakage Current	I _{DSS}	VDS=32V , VGS=0V , TJ=25℃	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	VGS=VDS , ID =250uA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS=10V , ID=12A	-	8	12	mΩ
		VGS=4.5V , ID=6A	-	11	18	
Dynamic characteristics						
Input Capacitance	C _{iss}	VDS=20V , VGS=0V , f=1MHz	-	1785	-	pF
Output Capacitance	C _{oss}		-	210	-	
Reverse Transfer Capacitance	C _{rss}		-	158	-	
Total Gate Charge	Q _g	VDS=20V , VGS=10V , ID=10A	-	31	-	nC
Gate-Source Charge	Q _{gs}		-	4	-	
Gate-Drain Charge	Q _{gd}		-	11	-	
Switching Characteristics						
Turn-On Delay Time	T _{d(on)}	VDD=20V ,VGS=10V , RG=3Ω, ID=10A	-	6	-	nS
Rise Time	T _r		-	16	-	
Turn-Off Delay Time	T _{d(off)}		-	31	-	
Fall Time	T _f		-	15	-	
Diode Characteristics						
Diode Forward Voltage	V _{SD}	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I _S		-	-	55	A
Reverse Recovery Time	T _{rr}	I _S =10A, di/dt=100A/us, TJ=25℃	-	31	-	nS
Reverse Recovery Charge	Q _{rr}		-	23	-	nC

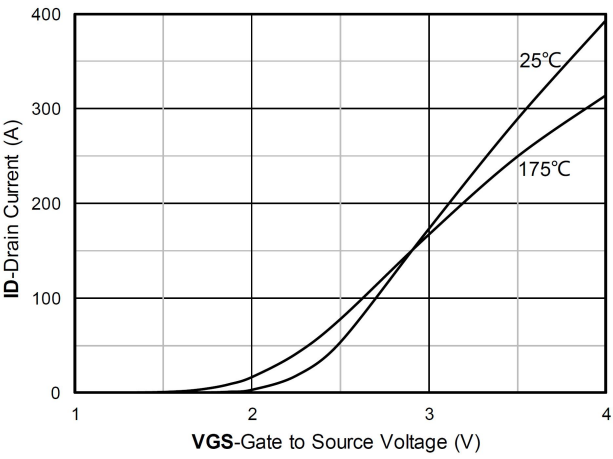
Note :

- The EAS test condition is VDD=20V,VGS=10V,L=0.1mH,RG=25Ω

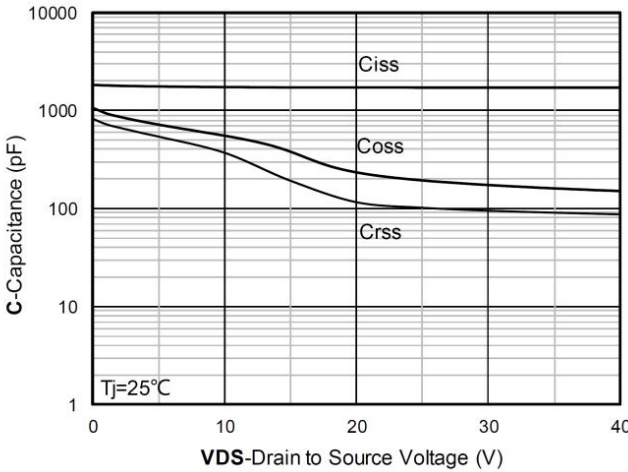
Typical Characteristic Curves



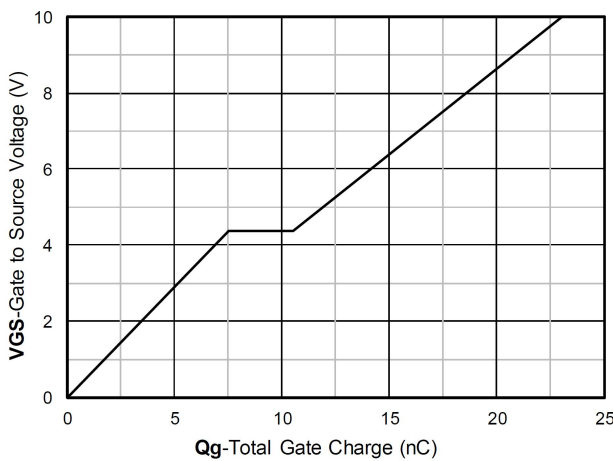
Output Characteristics



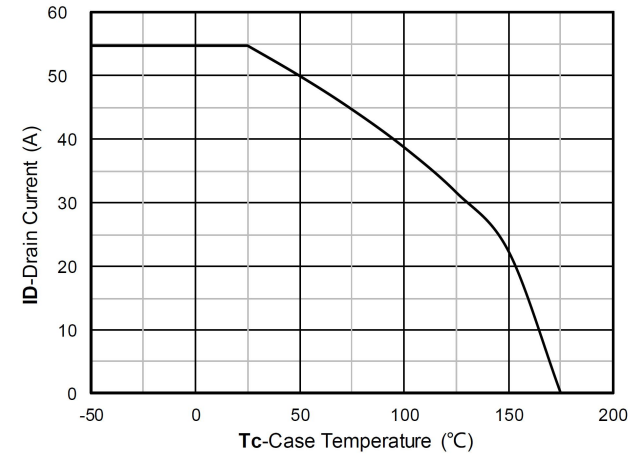
Transfer Characteristics



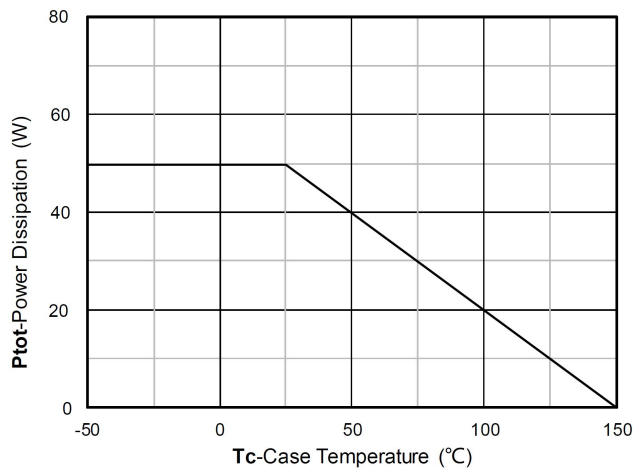
Capacitance Characteristics



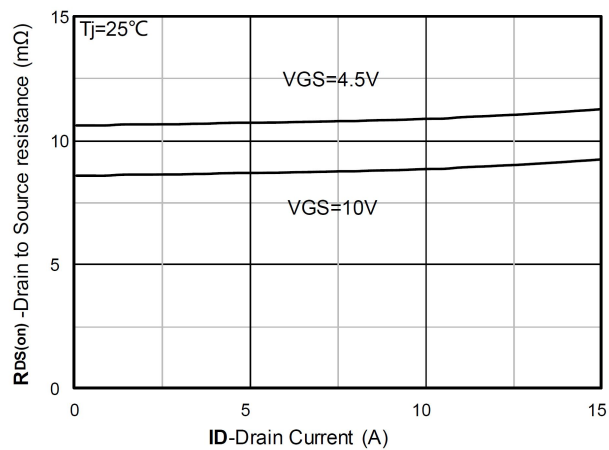
Gate Charge



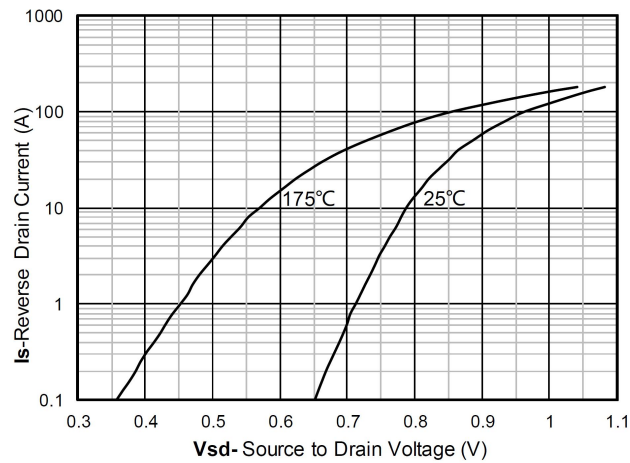
Current dissipation



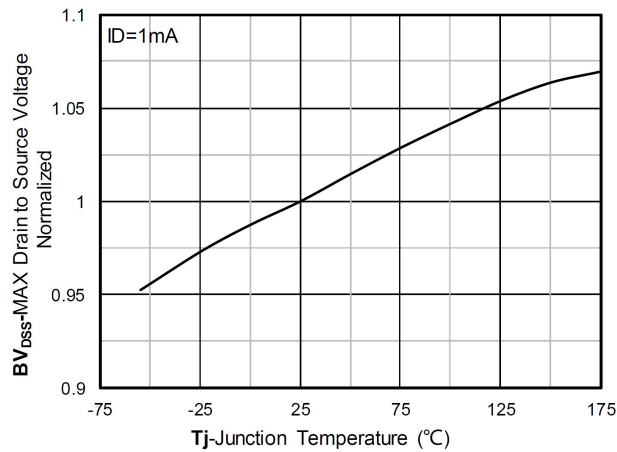
Power dissipation



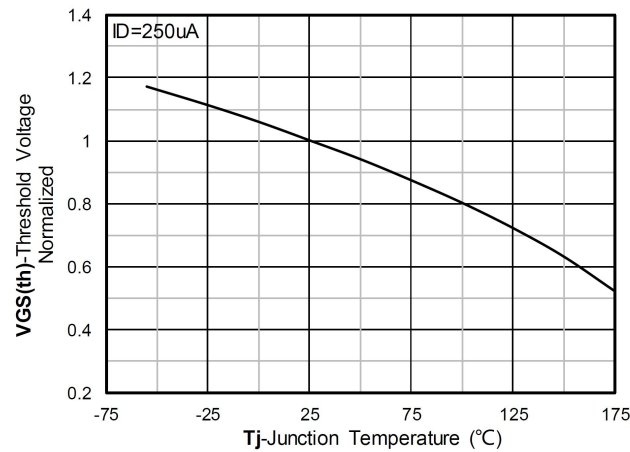
RDS(on) VS Drain Current



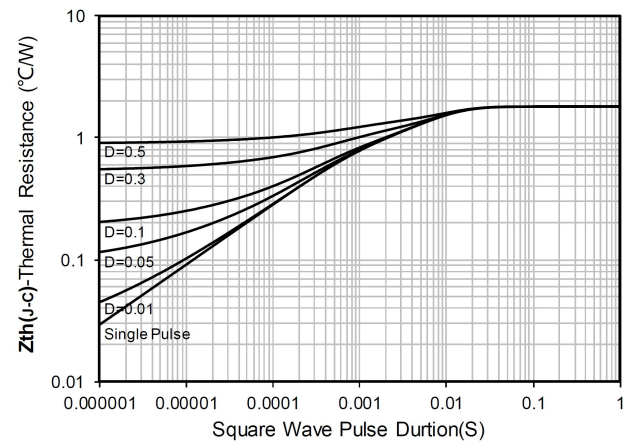
Forward characteristics of reverse diode



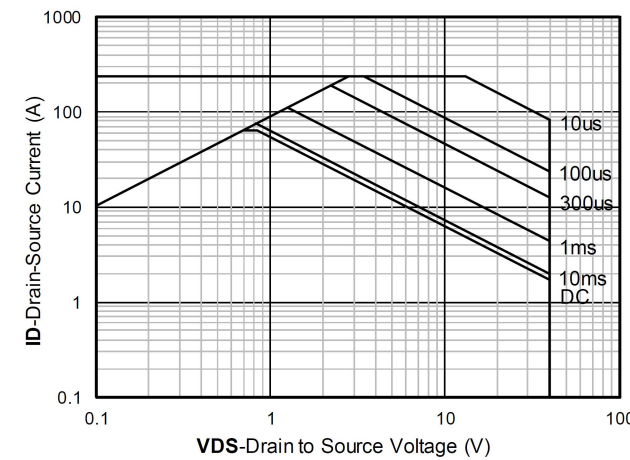
Normalized breakdown voltage



Normalized Threshold voltage



Maximum Transient Thermal Impedance

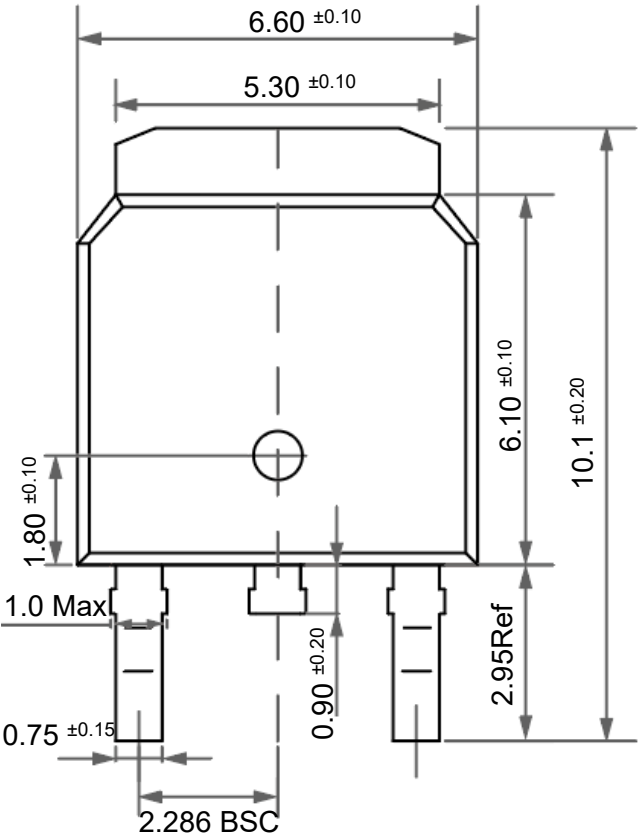


Safe Operation Area

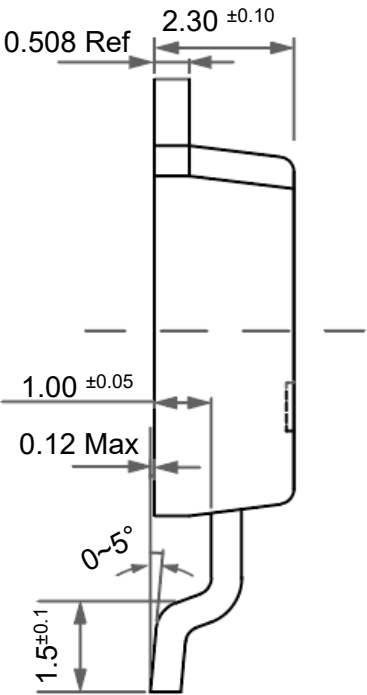
Package Outline

TO-252

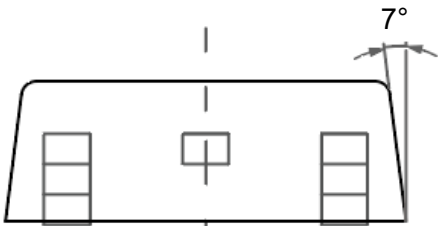
Dimensions in mm



Front View



Side View



Bottom View

Ordering Information

Device	Package	Shipping
TN50N40TE	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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