

Product Summary

- $V_{DS} = 40V, I_D = 55A$
- $R_{DS(on)} < 6.2m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 11m\Omega @ V_{GS} = 4.5V$

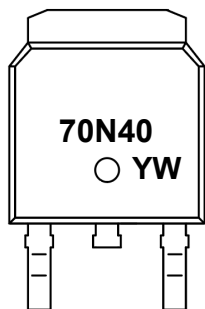
Features

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

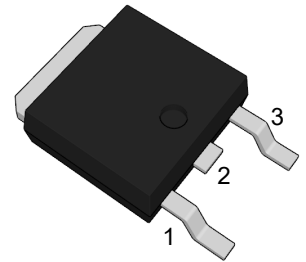
Application

- Load Switch
- PWM Application
- Power management

Marking Code



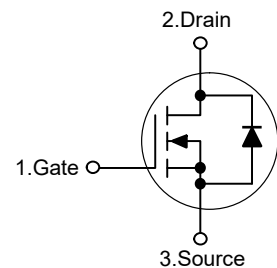
TO-252



(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	70	A
Drain Current-Pulsed ^{Note1}	I_{DM}	280	A
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	169	mJ
Maximum Power Dissipation	P_D	60	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.1	°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	40	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V,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	1.0	1.75	2.5	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V,I _D =30A	--	4.5	6.2	mΩ
		V _{GS} =4.5V,I _D =20A	--	6	11	mΩ
Forward Transconductance ^{Note3}	g _{fs}	V _{DS} =5V,I _D =3A	--	13	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V,f =1MHz	--	3031	--	pF
Output Capacitance	C _{oss}		--	213	--	pF
Reverse Transfer Capacitance	C _{rss}		--	179	--	pF
Gate Resistance	R _g	V _{GS} =0V,V _{DS} =0V,f=1MHz	--	1.9	--	Ω
Total Gate Charge	Q _g	V _{DS} =20V,I _D =30A,V _{GS} =10V	--	59	--	nC
Gate-Source Charge	Q _{gs}		--	12	--	nC
Gate-Drain Charge	Q _{gd}		--	12	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =20V, I _D =30A, V _{GS} =10V,R _L =1.2Ω,R _{GEN} =3Ω	--	11	--	nS
Turn-on Rise Time	t _r		--	32	--	nS
Turn-off Delay Time	t _{d(off)}		--	52	--	nS
Turn-off Fall Time	t _f		--	13	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =30A	--	--	1.2	V
Diode Forward Current	I _S		--	--	70	A

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. EAS condition: T_J=25°C, V_{DD}=25V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=26A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristic Curves

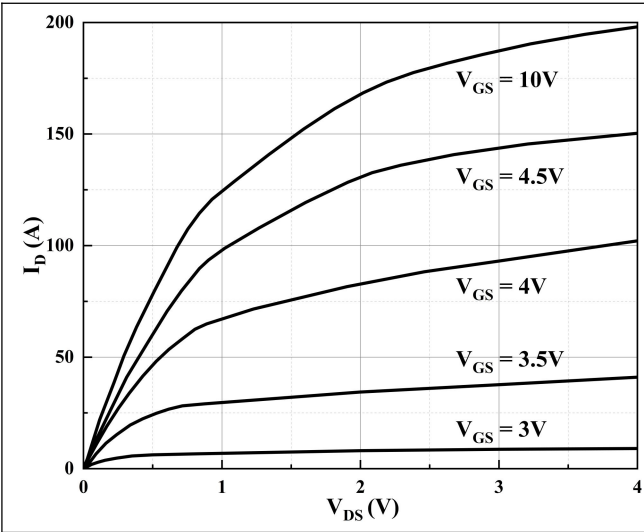


Figure 1. Typical Output Characteristics

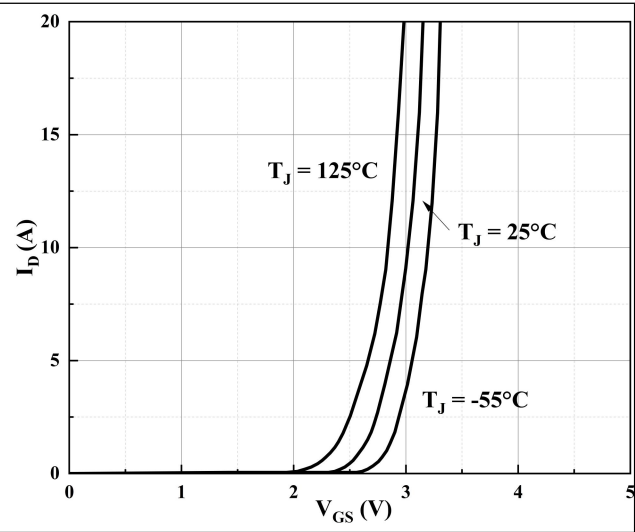


Figure 2. Typical Transfer Characteristics

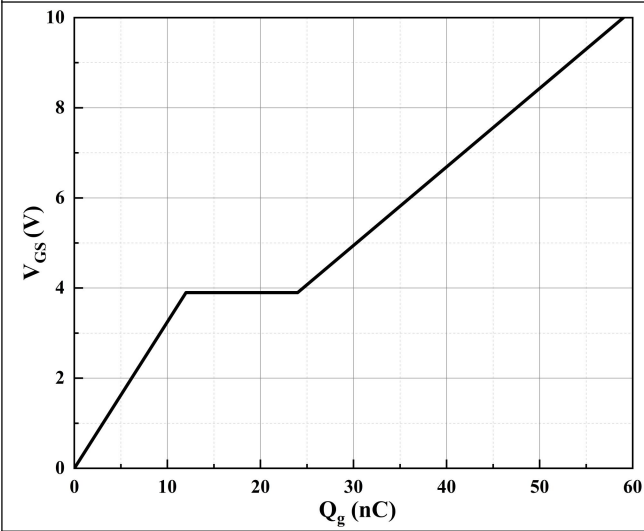


Figure 3. Typical Gate Charge

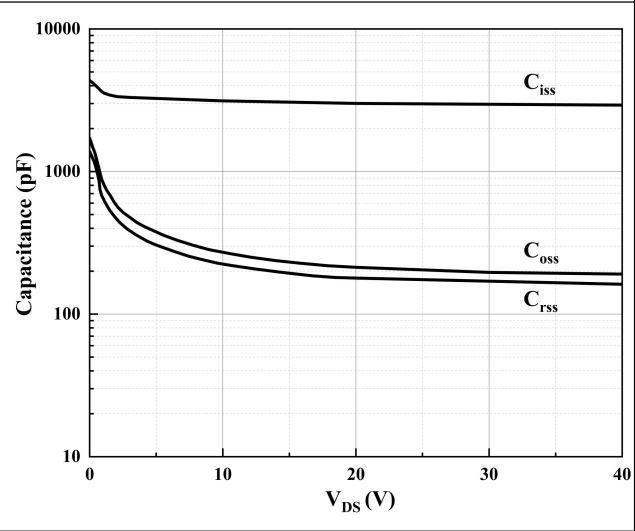


Figure 4. Typical Capacitance

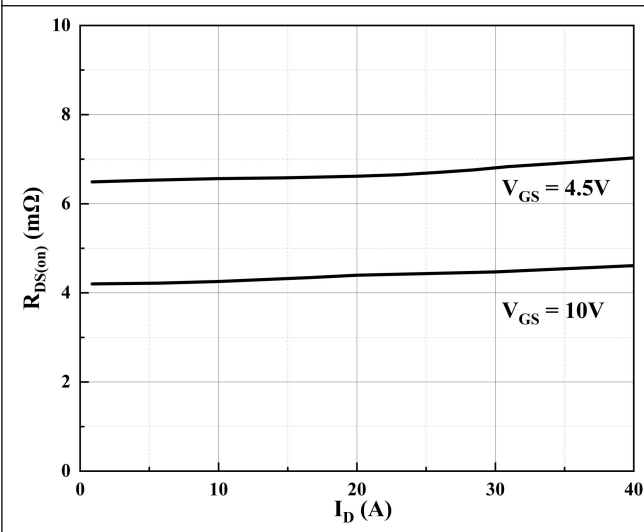


Figure 5. Static Drain-Source On-Resistance vs. Drain Current

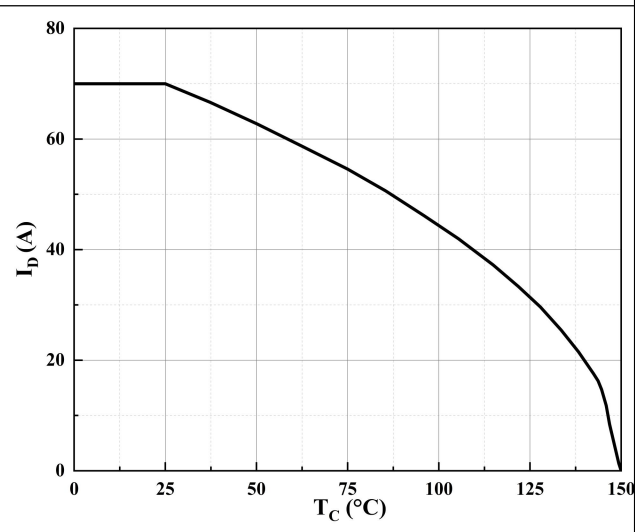


Figure 6. Maximum Continuous Drain Current vs. Case Temperature

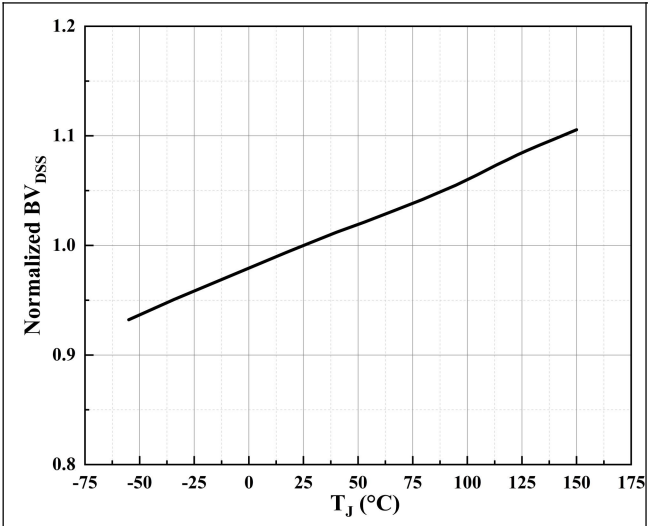


Figure 7. Normalized Drain-Source Breakdown Voltage vs. Junction Temperature

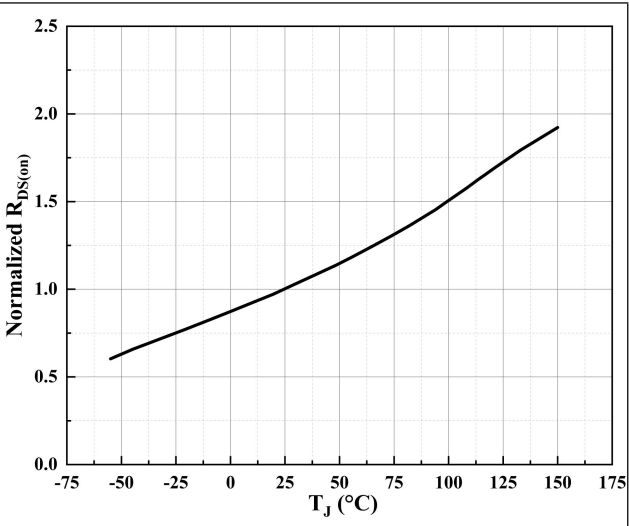


Figure 8. Normalized Static Drain-Source On-Resistance vs. Junction Temperature

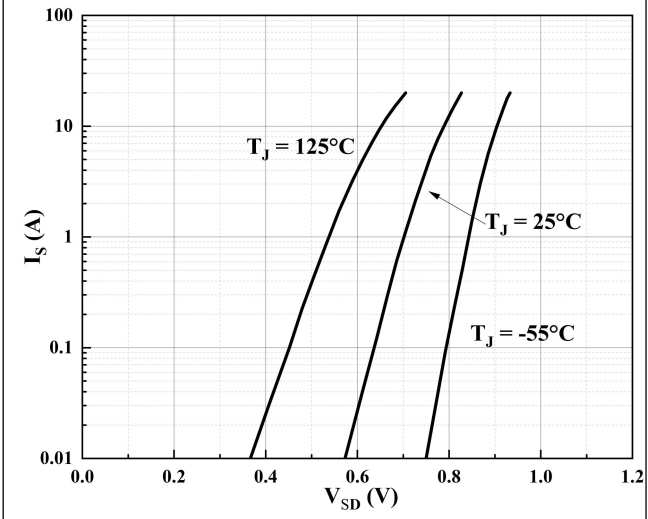


Figure 9. Body Diode Characteristics

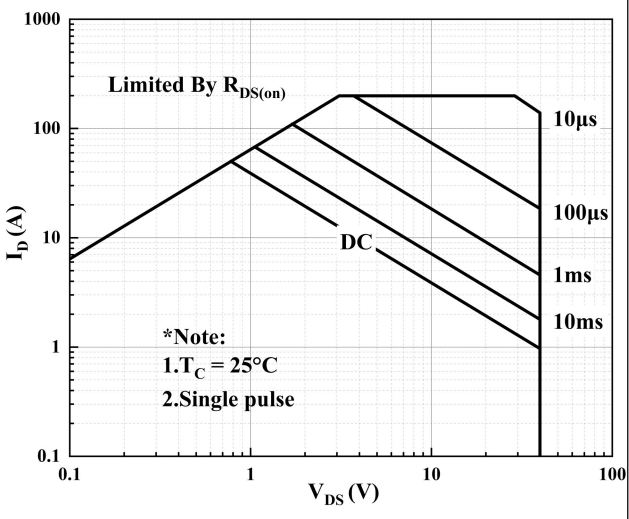


Figure 10. Maximum Safe Operating Area

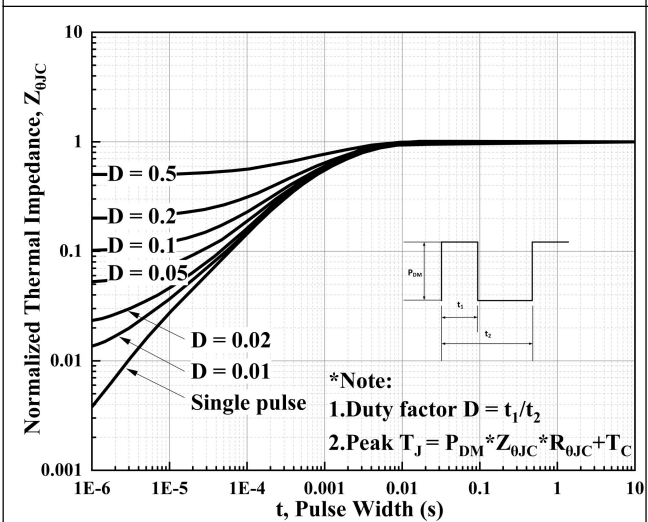


Figure 11. Normalized Gate Threshold Voltage vs. Junction Temperature

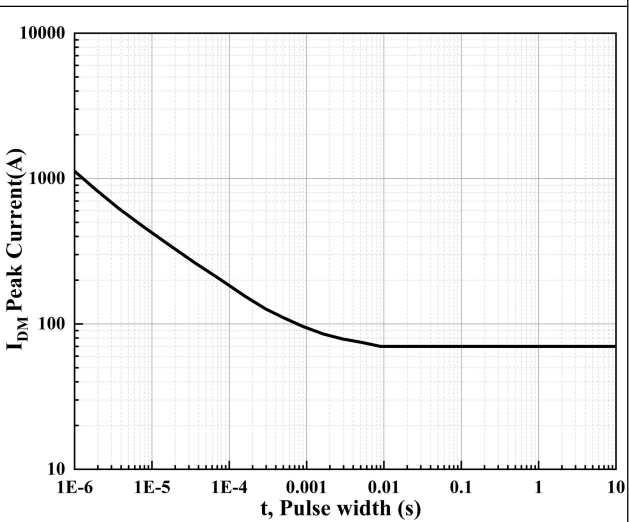
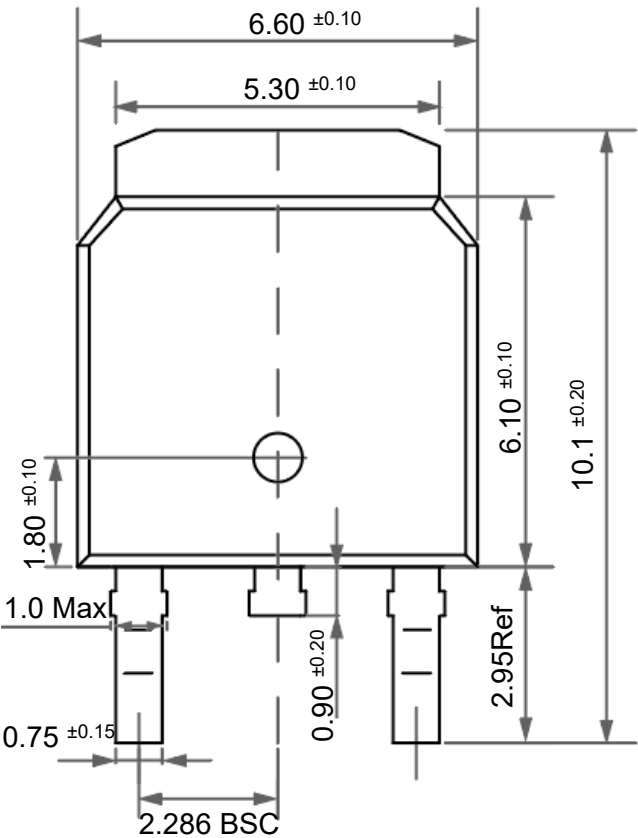


Figure 12. Peak Current Capacity

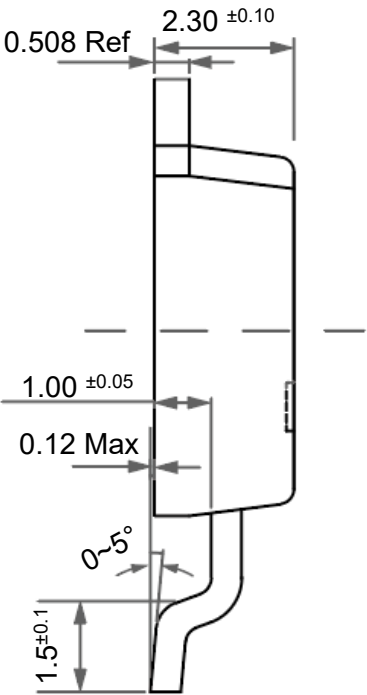
Package Outline

TO-252

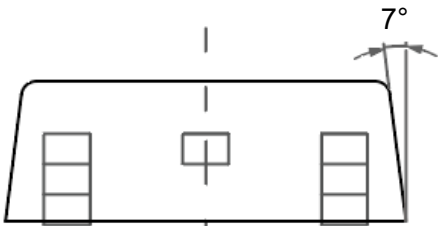
Dimensions in mm



Front View



Side View



Bottom View

Ordering Information

Device	Package	Shipping
TN70N40TE	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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