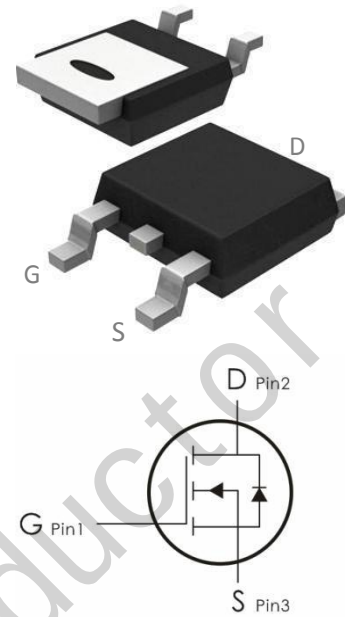


Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- (1) $V_{DS}=40V, I_D=70A, R_{DS(on)} < 6.2m\Omega @ V_{GS}=10V$
- (2) Lead free and Green Device Available
- (3) Excellent $R_{DS(ON)}$ and Low Gate Charge
- (4) Lead free product is acquired



Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	70	A
	Continuous Drain Current- $T_C=100^\circ C$	46	A
I_{DM}	Pulsed Drain Current ^{note1}	280	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	96	mJ
P_D	Power Dissipation- $T_C=25^\circ C$	58	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.6	$^\circ C/W$

Electrical Characteristics: ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V,	---	---	1.0	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1.0	1.5	2.5	V
R _{DS(ON)}	Drain-Source On Resistanc ²	V _{GS} =10V, I _D =30A	---	4.8	6.2	m Ω
		V _{GS} =4.5V, I _D =20A	---	7.2	11	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	2950	---	pF
C _{oss}	Output Capacitance		---	220	---	
C _{rss}	Reverse Transfer Capacitance		---	190	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	VDD=20V , VGS=10V , RG=3Ω , I _D =30A	---	8	---	ns
t _r	Rise Time		---	16	---	ns
t _{d(off)}	Turn-Off Delay Time		---	21	---	ns
t _f	Fall Time		---	10	---	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	70	A
I _{SM}	Pulsed Source Current		---	---	280	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =30A ,	---	---	1.2	V

Trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , T _J =25°C	---	20	---	ns
Qrr	Reverse Recovery Charge		---	10	---	nC
Qg	Total Gate Charge	V _{DS} =20V , I _D =30A V _{GS} =10V	---	46	---	nC
Qgs	Gate-Source Charge		---	7.2	---	nC
Qgd	Gate-Drain("Miller") Charge		---	8.8	---	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25°C, V_{DD}=20V, R_G=25Ω, L=0.5mH, I_{AS}=19.6A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics: (T_A=25°C unless otherwise noted)

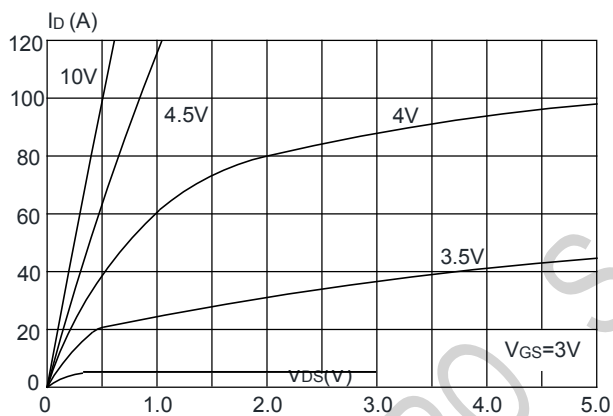


Figure 1: Output Characteristics

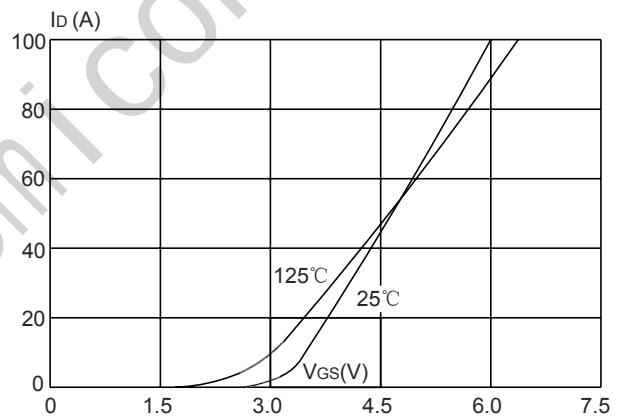


Figure 2: Typical Transfer Characteristics

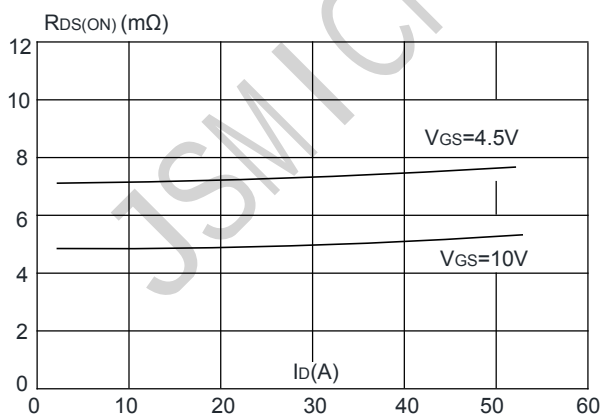


Figure 3: On-resistance vs. Drain Current
V_{GS}(V)

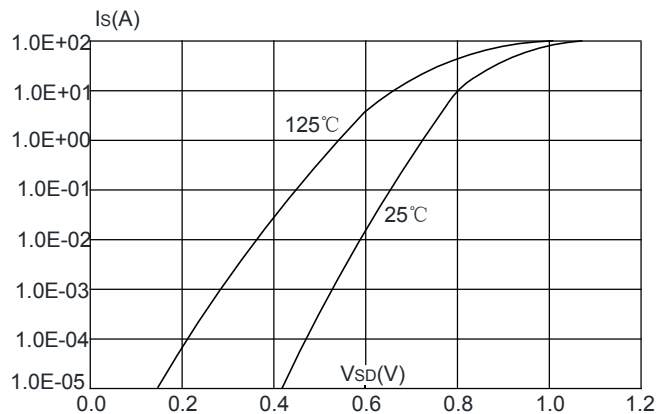


Figure 4: Body Diode Characteristics
C(pF)

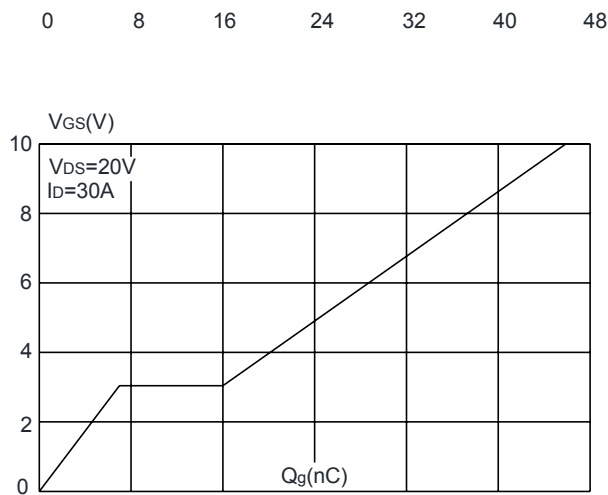


Figure 5: Gate Charge Characteristics

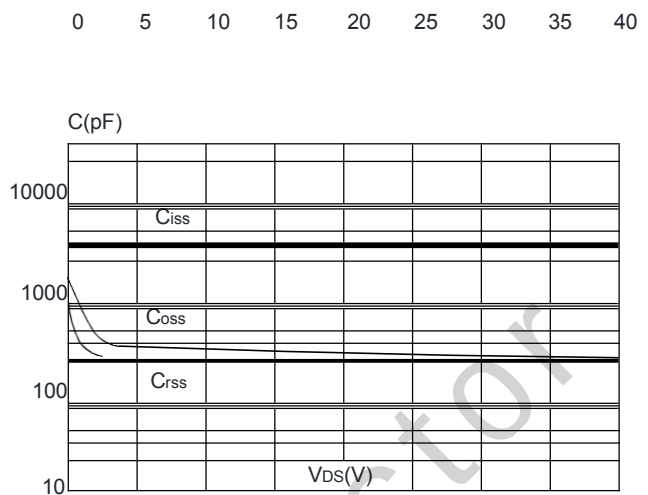


Figure 6: Capacitance Characteristics

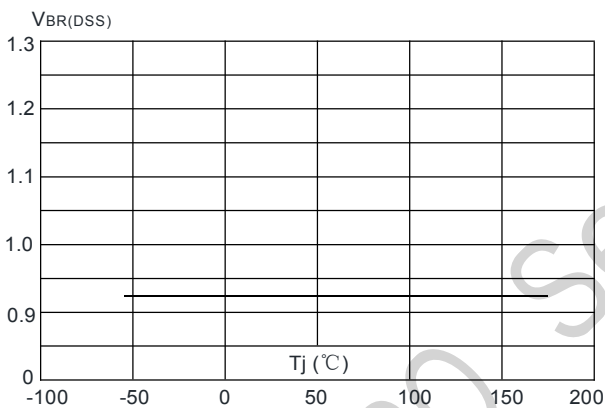


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

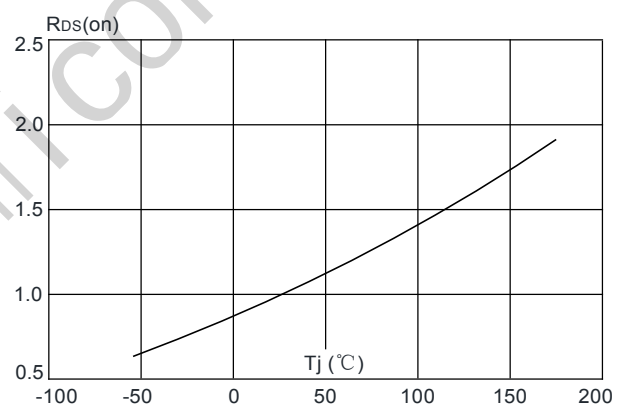


Figure 8: Normalized on Resistance vs. Junction Temperature

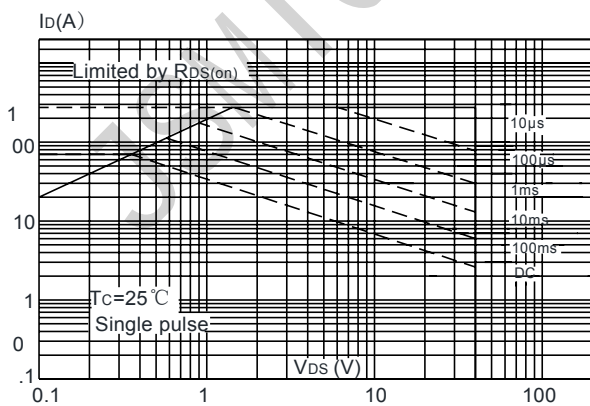


Figure 9: Maximum Safe Operating Area

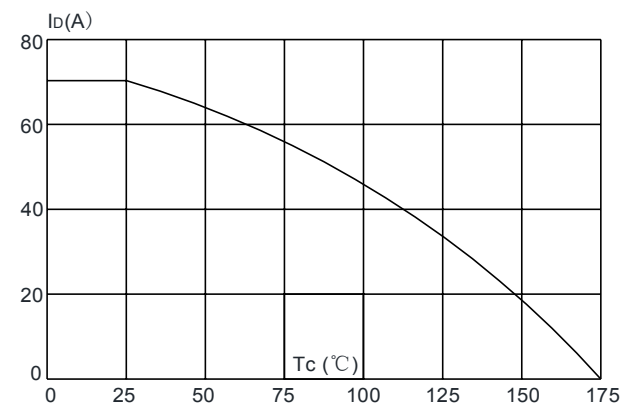


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

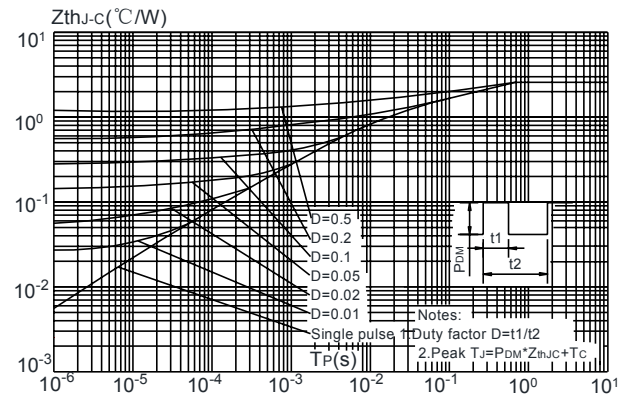


Figure.11:Maximum Effective
Transient Thermal Impedance, Junction-to-Case

Technical drawing of a mechanical part, T0-252, showing three views: front, side, and detail 'A'.

Front View:

- Overall width: 6.5 ± 0.05
- Overall height: 2.3 ± 0.05
- Top edge: R 0.25 $\sim 2X$
- Internal features: 7° $\sim 2X$
- Bottom edge: 2.286
- Central hole: 0.076 MAX $\sim 6X$
- Bottom flange: 0.76 $\sim 3X$

Side View:

- Overall width: 5.4 ± 0.2
- Overall height: 6.1 ± 0.2
- Top edge: 20°
- Internal features: 7°
- Bottom edge: 2.286

Detail 'A':

- Overall width: 5.06 REF
- Overall height: 5.25 REF
- Top edge: R 0.25
- Internal features: 7°
- Bottom edge: 2.286
- Bottom flange: 0.76 $\sim 3X$

Dimensions and Tolerances:

- 0.508
- 1.01 ± 0.05
- 0.1 ± 0.05
- 10.035
- 3° $\pm 3^\circ$
- 1.2 REF (FOR CENTER)
- 0.3 REF (FOR CENTER)
- 5.08
- 0.1
- 5.25 REF
- 0.508
- 1.5 ± 0.1
- 25° REF
- 3° $\pm 3^\circ$