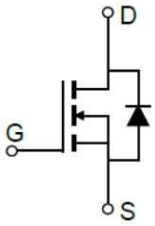
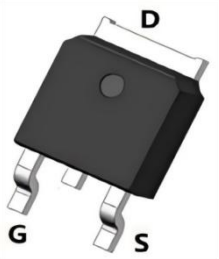
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	100	V
$R_{DS(on)}$	23	mΩ
I_D	40	A





TO-252

Features

- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate
- Lead free product is acquired

Applications

- Load Switch
- PWM Application
- Power management

Absolute Maximum Ratings(at TC=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	40	A
Pulsed Drain Current (Note1)	I_{DM}	160	A
Power Dissipation	P_D	88	W
Single Pulse Avalanche Energy (Note5)	E_{AS}	56	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case(Note 2)	$R_{\theta JC}$	1.7	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62	°C/W

Electrical Characteristics (at TJ = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V,I_D=250μA	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	-	-	1	μA
		V_{DS}=100V,T_C=125°C	-	-	100	μA
Gate Leakage Current	I_{GSS}	V_{GS}= ± 20V, V_{DS}=0V	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250 μA	1	-	2	V
Drain-Source On-State Resistance (Not	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	23	29	mΩ
	$R_{DS(on)}$	V_{GS}= 4.5V, I_D=10A		24.2	30	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f = 1MHz	-	2858	-	pF
Output Capacitance	C_{oss}		-	127	-	pF
Reverse Transfer Capacitance	C_{rss}		-	100	-	pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=30V, I_D=15A V_{GS}=10V,R_G=1.8Ω	-	11	-	ns
Rise Time	t_r		-	45	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	67	-	ns
Fall Time	t_f		-	48	-	ns
Total Gate Charge	Q_G	V_{DS}=30V,I_D=15A, V_{GS}=10V	-	66	-	nC
Gate to Source Charge	Q_{GS}		-	10	-	nC
Gate to Drain Charge	Q_{GD}		-	14	-	nC

Source-Drain Diode Characteristics (at TJ = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current (Note 2)	I_S		-	-	40	A
Maximun Body-Diode Pulsed Current	I_{SM}		-	-	160	A
Drain-Source Diode Forward Voltage(Note 3)	V_{SD}	I_{SD}=20A	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_S=I_F, I_{SD}=30A,V_{GS}=0 V,	-	28	-	ns
Reverse Recovery Charge	Q_{rr}	dI/dt=100 A/μs (Note3)	-	40	-	μC

Typical Characteristics

Figure 1: Power De-rating

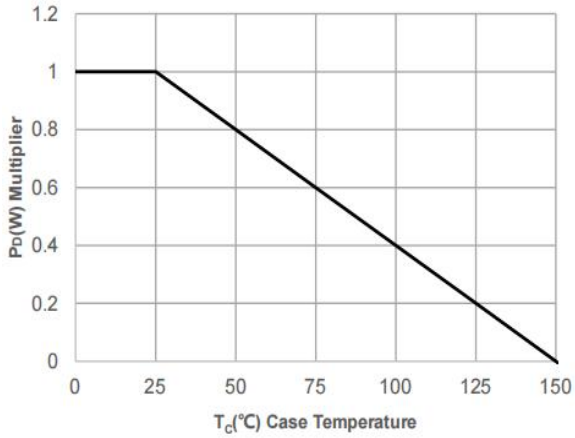


Figure 2: Current De-rating

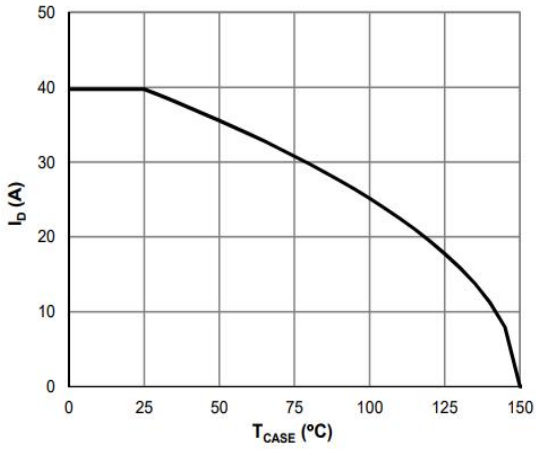


Figure 3: Normalized Maximum Transient Thermal Impedance

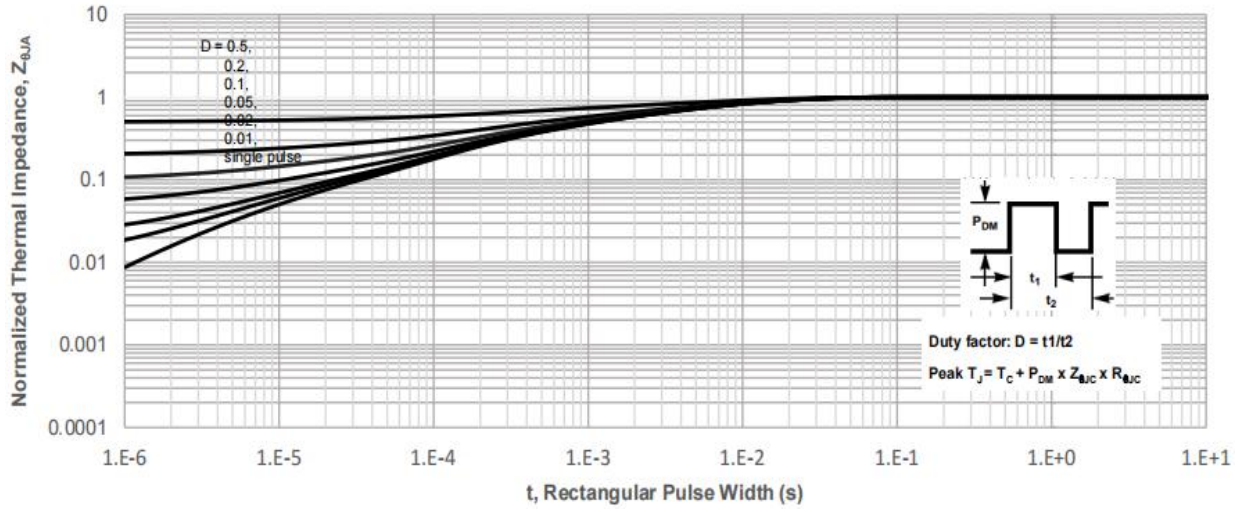


Figure 4: Peak Current Capacity

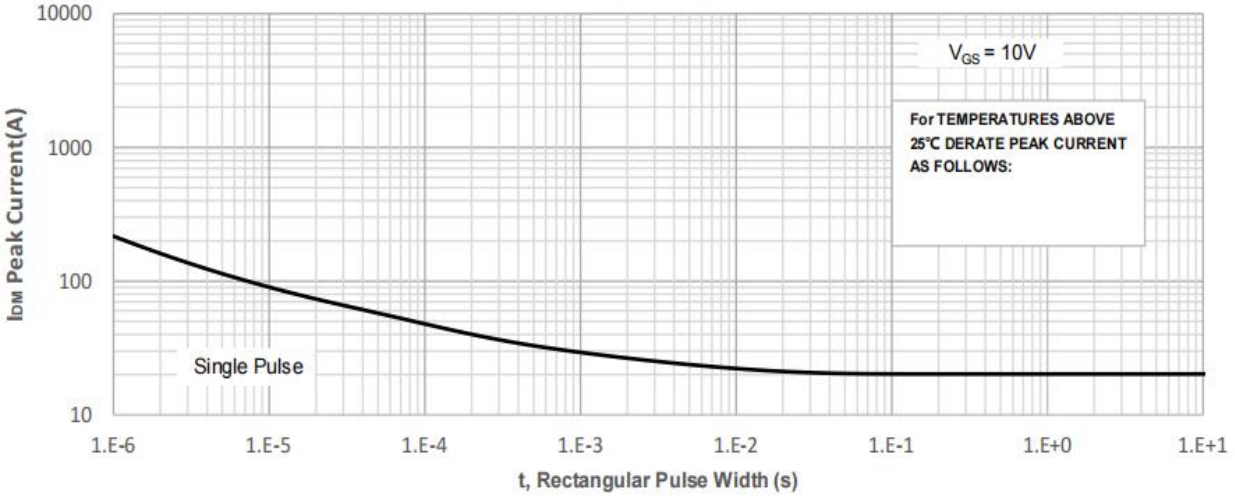


Figure 5: Output Characteristics

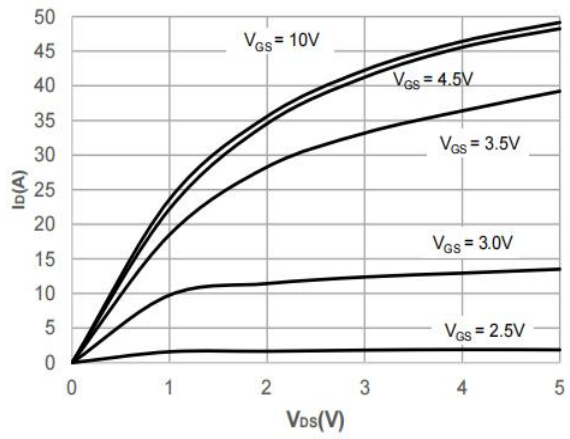


Figure 6: Typical Transfer Characteristics

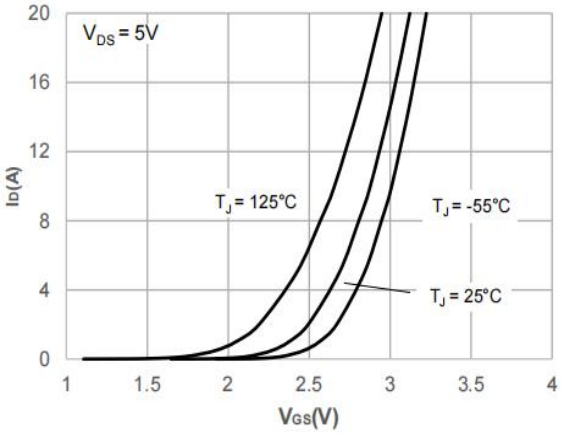


Figure 7: On-resistance vs. Drain Current

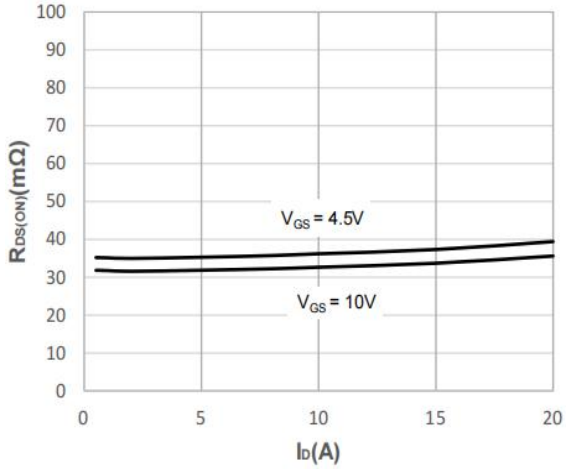


Figure 8: Body Diode Characteristics

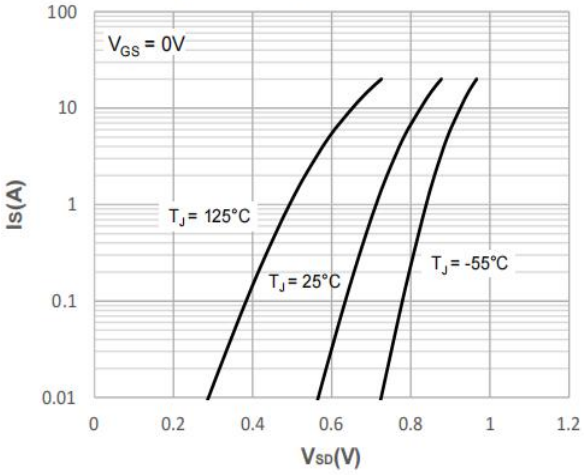


Figure 9: Gate Charge Characteristics

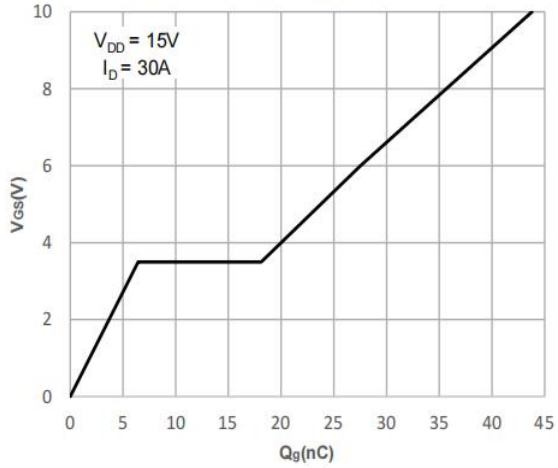


Figure 10: Capacitance Characteristics

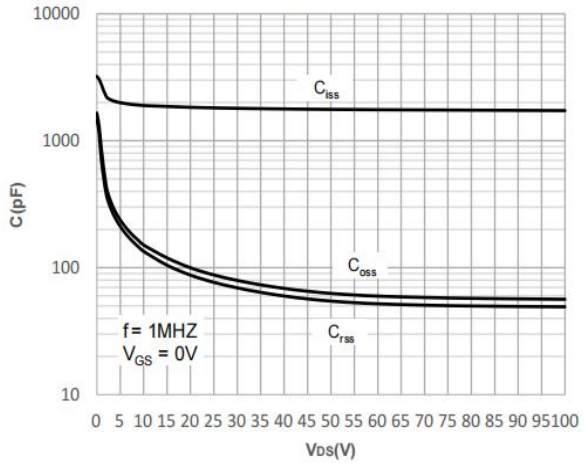


Figure 11: Normalized Breakdown voltage vs. Junction Temperature

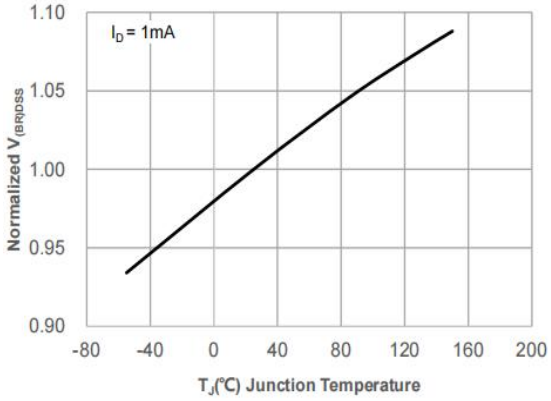


Figure 12: Normalized on Resistance vs. Junction Temperature

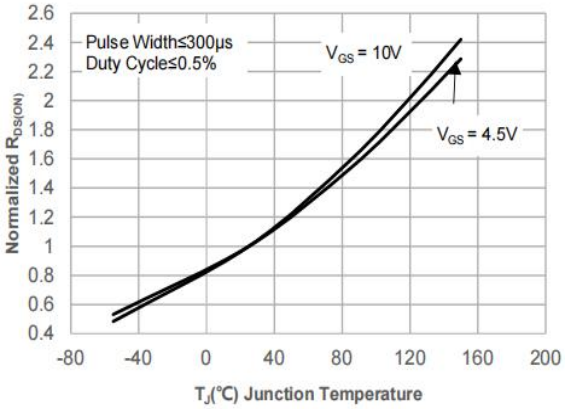


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

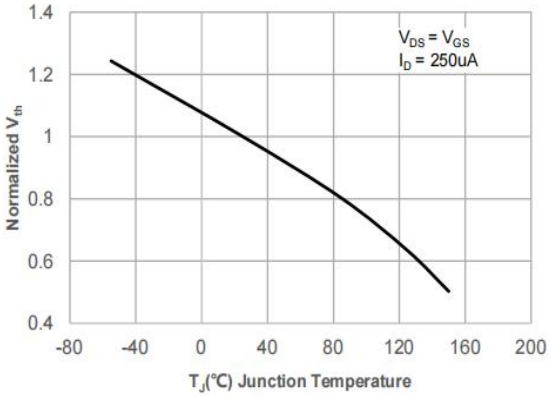


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

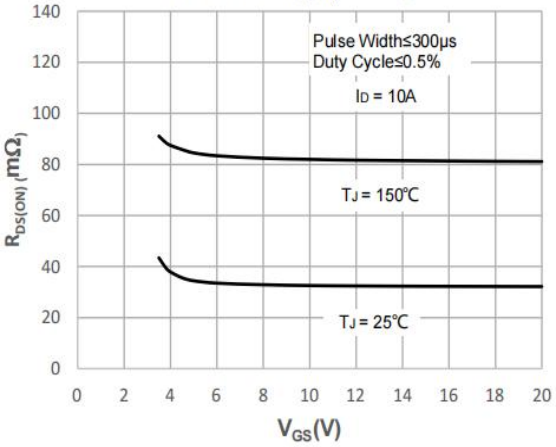
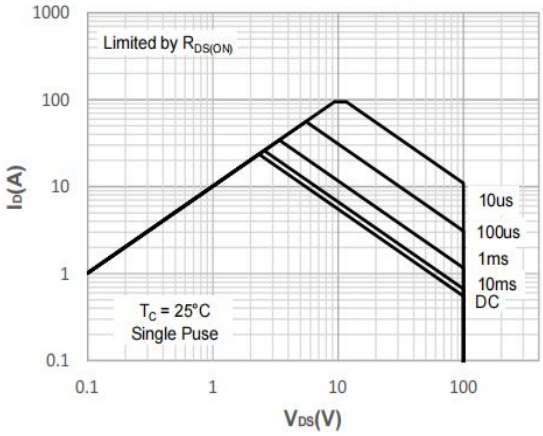
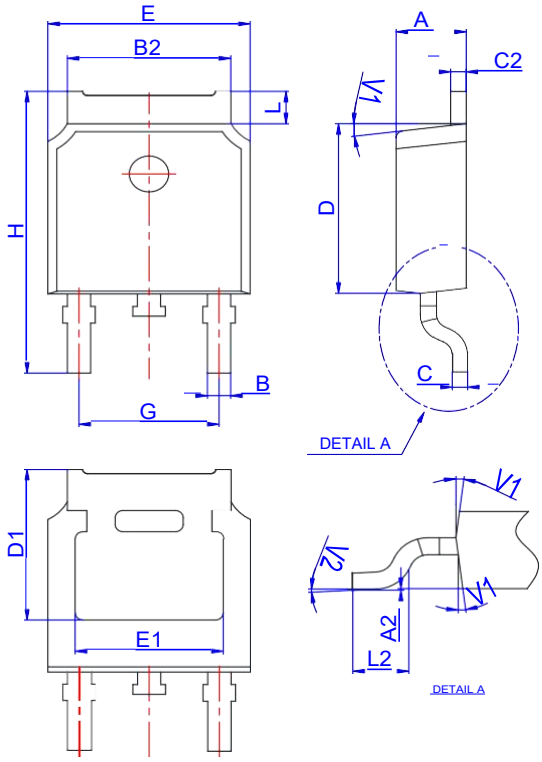


Figure 15: Maximum Safe Operating Area



Package Outlines

TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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