N-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY

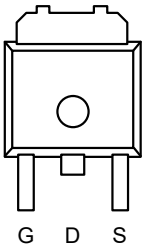
BV_{DSS}	100V
$R_{DSON(MAX.)}$	0.052Ω
I_D	30A

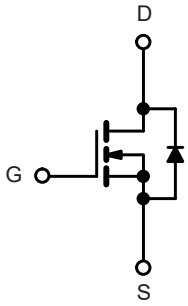
FEATURES

- TrenchFET® Power MOSFETS
- 175 °C Junction Temperature
- Low Thermal Resistance Package

Available
RoHS* COMPLIANT

TO-252





N-Channel MOSFET

Absolute Maximum Ratings(T_C = 25 °C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current@10V	T_C = 25 ℃	I_D	30	A
	T_C = 100 ℃		13	
Pulsed Drain Current		I_{DM}	80	A
Single Pulse Avalanche Energy	L = 0.1 mH	E_{AS}	30	mJ
Total Power Dissipation	T_C = 25 ℃	P_D	41.6	W
Operating Junction and Storage Temperature Range		T_J , T_{STG}	-55 to +175	℃

Thermal Characteristics

Parameter		Symbol	LIMIT.	Unit
Thermal resistance, junction-to-case	Steady State	$R_{\theta JC}$	3.6	℃/W

Electrical Characteristics T_J = 25°C, unless otherwise noted

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS} = 0 V , I_D = 250 µA	100	-	-	V
Gate-body Leakage current		I_{GSS}	V_{DS} = 0 V , V_{GS} = ± 20 V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J = 25℃	I_{DSS}	V_{DS} = 100 V , V_{GS} = 0 V	-	-	1	µA
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250 µA	1		2.5	V
Drain-Source On-Resistance		$R_{DS(on)}$	V_{GS} = 10 V , I_D = 10 A	-	0.040	0.052	Ω
			V_{GS} = 4.5 V , I_D = 6 A	-	0.045	0.058	
Dynamic Characteristics							
Input Capacitance		C_{iss}	V_{DS} = 25 V , V_{GS} = 0 V , f = 1 MHz	-	1966	-	pF
Output Capacitance		C_{oss}		-	92	-	
Reverse Transfer Capacitance		C_{rss}		-	76	-	
Switching Characteristics							
Total Gate Charge		Q_g	V_{GS} = 4.5 V , V_{DS} = 80 V , I_D = 20 A	-	22	-	nC
Gate-Source Charge		Q_{gs}		-	3.3	-	
Gate-Drain Charge		Q_{gd}		-	16	-	
Turn-On Delay Time		$t_{d(on)}$	V_{DD} = 80 V , I_D ≅ 20 A , V_{GEN} = 4.5 V , R_G = 3.1 Ω	-	13	-	nS
Rise Time		t_r		-	93	-	
Turn-Off Delay Time		$t_{d(off)}$		-	42	-	
Fall Time		t_f		-	73	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage		V_{SD}	I_S = 20 A , V_{GS} = 0 V	-	-	1.2	V
Continuous Source-Dranin Diode Current		I_S	T_J = 25 °C	-	-	30	A
Pulse Diode Forward Currnt		I_{SM}		-	-	80	
Reverse Recovery Time		t_{rr}	T_J = 25 °C , I_F = 20 A , dI/dt = 100 A/µs	-	66	-	ns
Reverse Recovery Charge		Q_{rr}		-	154	-	nC

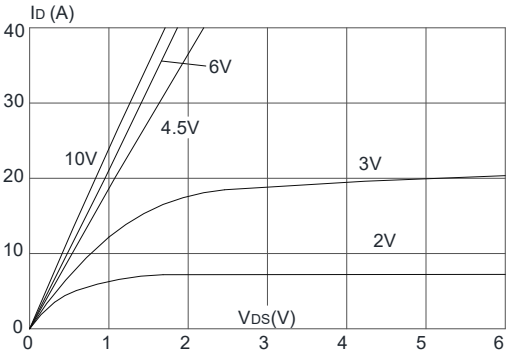
Notes:

a. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

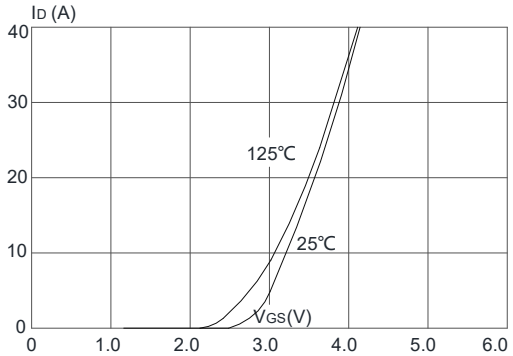
b. EAS condition : T_J=25°C,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω,I_{AS}= 11A.

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

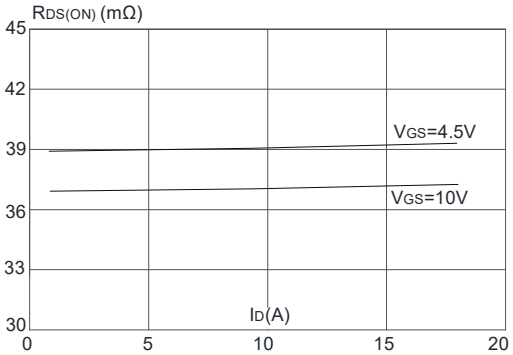
TYPICAL CHARACTERISTICS (25 °C unless noted)



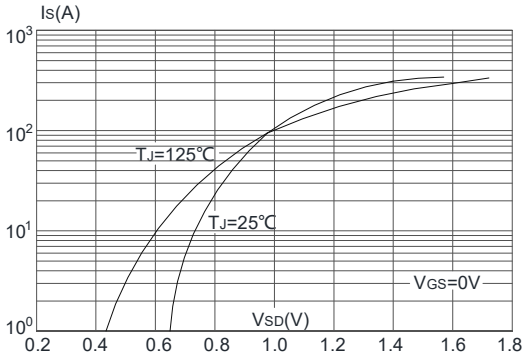
Output Characteristics



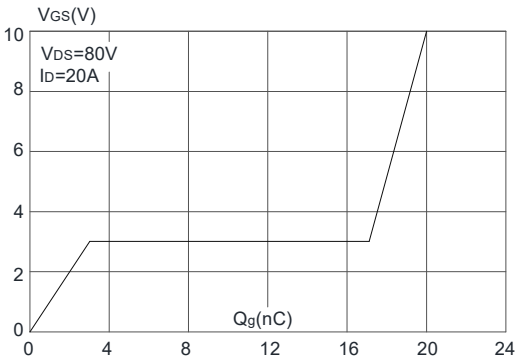
Typical Transfer Characteristics



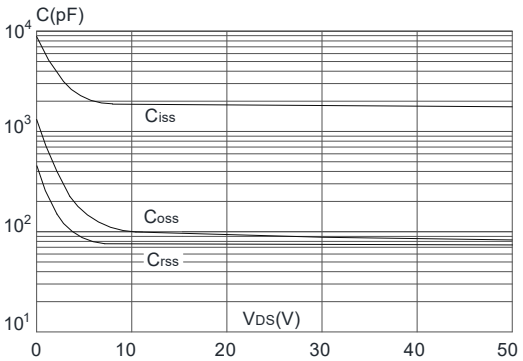
On-resistance vs. Drain Current



Body Diode Characteristics

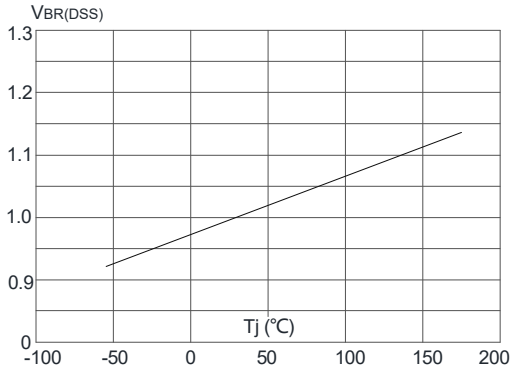


Gate Charge Characteristics

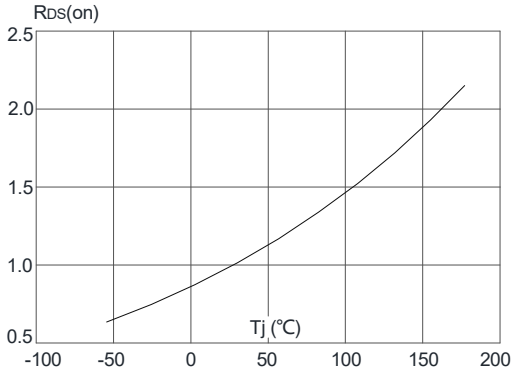


Capacitance Characteristics

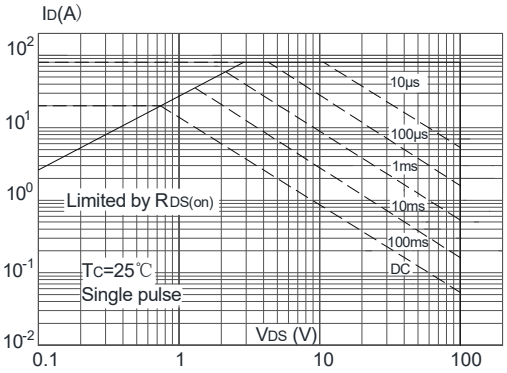
TYPICAL CHARACTERISTICS (25 °C unless noted)



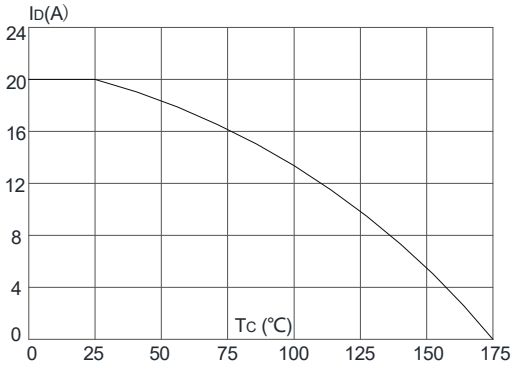
Normalized Breakdown Voltage vs. Junction Temperature



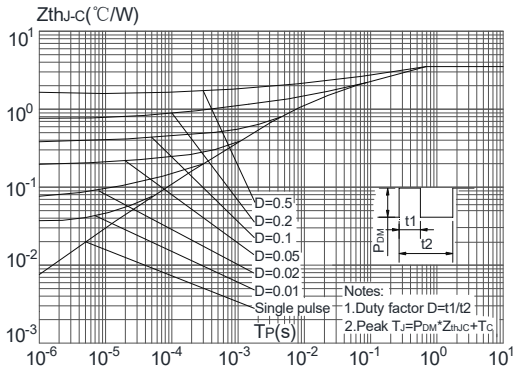
Normalized on Resistance vs. Junction Temperature



Maximum Safe Operating Area



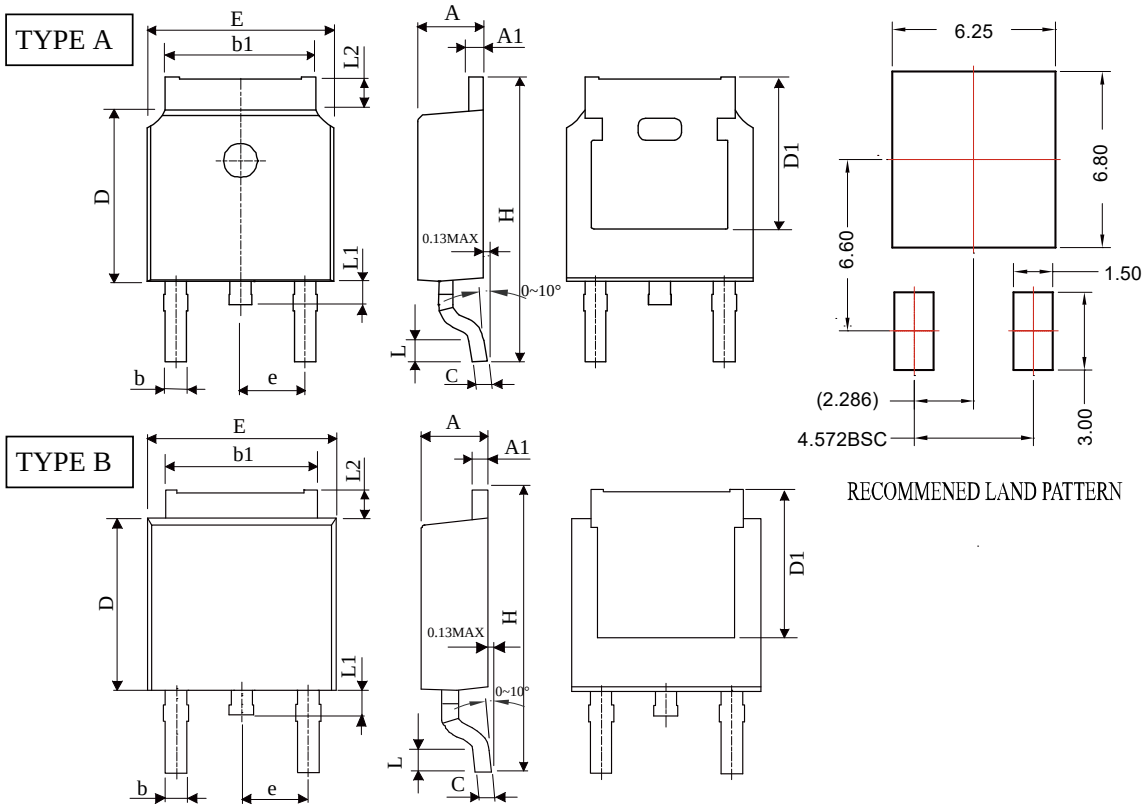
Maximum Continuous Drain Current vs. Case Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-252

Unit: mm



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.20	2.40	0.087	0.094
A1	0.45	0.89	0.018	0.035
b	0.50	0.90	0.019	0.035
b1	4.95	5.59	0.195	0.220
C	0.40	0.61	0.016	0.024
D	5.40	6.63	0.213	0.261
E	6.05	7.10	0.238	0.280
e	1.98	2.59	0.078	0.102
H	8.80	10.6	0.346	0.417
L	0.25	1.350	0.010	0.053
L1	0.50	1.20	0.020	0.047
L2	0.70	1.78	0.028	0.070
D1	5.00	5.60	0.197	0.220