MSD100N110SC

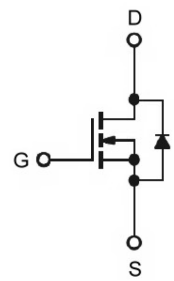
N-Channel 100-V (D-S) MOSFET

Description

The device is using trench DMOS technology. This advanced technology has been especially tailored to minimize $R_{DS(ON)}$, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

The device meets the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Graphic Symbol



Features

- $R_{DS(ON)}$ =11mΩ@ V_{GS} =10V
- Fast switching
- Improve dv/dt Capability
- 100% EAS Guaranteed
- Green Device Available

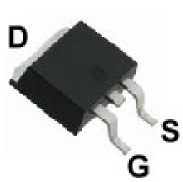
Typical Applications

- Networking
- Load Switch
- LED Applications
- Quick Charger

Package type：TO-252

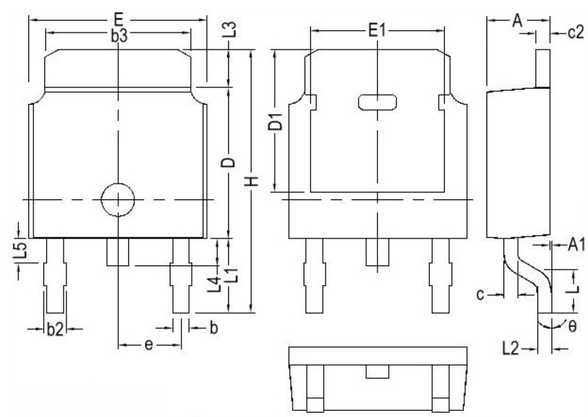
Packing & Order Information

2,500/Reel



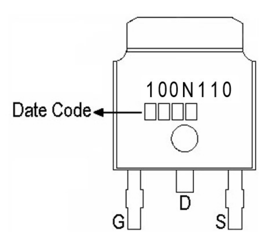
RoHS Compliant

Package Dimension



REF.	Millimeter			REF.	Millimeter		
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	2.20	2.30	2.38	E1	4.40	-	-
A1	0	-	0.127	e	2.286 BSC		
b	0.64	0.76	0.88	H	9.40	10.00	10.40
b2	0.77	0.84	1.14	L	1.40	1.52	1.77
b3	5.21	5.34	5.46	L1	2.743 Ref.		
c	0.45	0.50	0.60	L2	0.508 BSC		
c2	0.45	0.50	0.58	L3	0.89	-	1.27
D	6.00	6.10	6.223	L4	0.64	-	1.01
D1	5.21	-	-	L5	-	-	-
E	6.40	6.60	6.731	θ	0°	-	10°

Marking



MSD100N110SC

N-Channel 100-V (D-S) MOSFET

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	+20/-12	V
I_D	Continuous Drain Current[1] (T_C =25°C)	60	A
	Continuous Drain Current[1] (T_C =100°C)	38	A
I_{DM}	Pulsed Drain Current[1,2]	240	A
I_{AS}	Single Pulse Avalanche Current, L =0.1mH[3]	62	A
E_{AS}	Single Pulse Avalanche Energy, L =0.1mH[3]	192	mJ
P_D	Power Dissipation[4] (T_C =25°C)	94	W
	Power Dissipation[4] (T_A =25°C)	2	W
T_J/T_{STG}	Operating Junction and Storage Temperature	-50 to +150	°C

Thermal Resistance Ratings

Symbol	Parameter	Maximum	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient[1]	62.5	°C/W
$R_{\theta JC}$	Maximum Junction-to-Case[1]	1.33	°C/W

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{GS (th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_D =250μA	2.0	2.9	4.0	V
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} =0V, I_D =250μA	100	-	-	V
g_{fs}	Forward Transconductance	V_{DS} =10V, I_D =3A	-	10	-	S
I_{GSS}	Gate-Source Leakage Current	V_{DS} =0V, V_{GS} =20V	-	-	100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS} =100V, V_{GS} =0V, T_J =25°C V_{DS} =80V, V_{GS} =0V, T_J =85°C	-	-	1 10	μA
$R_{DS (on)}$	Static Drain-Source On-Resistance[2]	V_{GS} =10V, I_D =20A	-	-	11	mΩ
EAS	Single Pulse Avalanche Energy[5]	V_{DD} =50V, L =0.1mH, I_{AS} =30A	45	-	-	mJ
V_{SD}	Diode Forward Voltage[2]	I_S =20A, V_{GS} =0V, T_J =25°C	-	-	1.2	V
I_S	Continuous Source Current[1,6]	V_G =V_D =0V, Force Current	-	-	60	A
I_{SM}	Pulsed Source Current[2,6]		-	-	120	

Notes

1. The data tested by surface mounted on a 1 inch[2] FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. The EAS data shows maximum rating. The test condition is V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=62A.
4. The power dissipation is limited by 150℃ junction temperature.
5. The Min. value is 100% EAS tested guarantee.
6. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

MSD100N110SC

N-Channel 100-V (D-S) MOSFET

Dynamic						
Symbol	**Parameter**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Q_g	Total Gate Charge[2]	V_{DS} =80V, I_D =8A, V_{GS} =10V	--	28.8	--	nC
Q_{gs}	Gate-Source Charge		--	5.8	--	
Q_{gd}	Gate-Drain Charge		--	9.2	--	
$t_{d(on)}$	Turn-On Delay Time[2]	V_{DS} =50V, I_D =1A, V_{GS} =10V, R_G =6Ω	--	22	--	ns
t_r	Rise Time		--	18.7	--	
$t_{d(off)}$	Turn-Off Delay Time		--	42	--	
t_f	Fall Time		--	22	--	
C_{ISS}	Input Capacitance	V_{DS} =50V, V_{GS} =0V, f =1.0MHz	--	1950	--	pF
C_{OSS}	Output Capacitance		--	665	--	
C_{RSS}	Reverse Transfer Capacitance		--	33	--	
Rg	Gate Resistance	V_{GS} =V_{DS} =0V, f =1.0MHz	--	1.4	--	Ω

MSD100N110SC

N-Channel 100-V (D-S) MOSFET

- **Typical Electrical Characteristics**

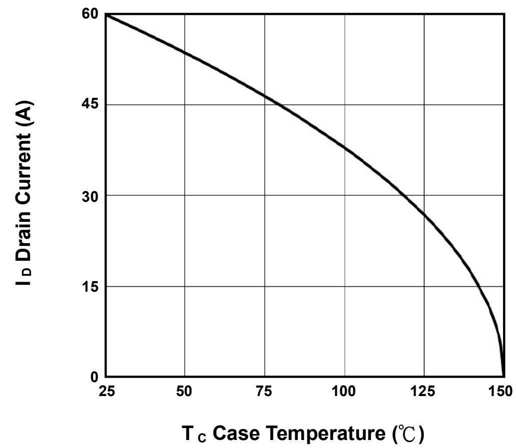


FIG.1-Drain Current vs. T_C

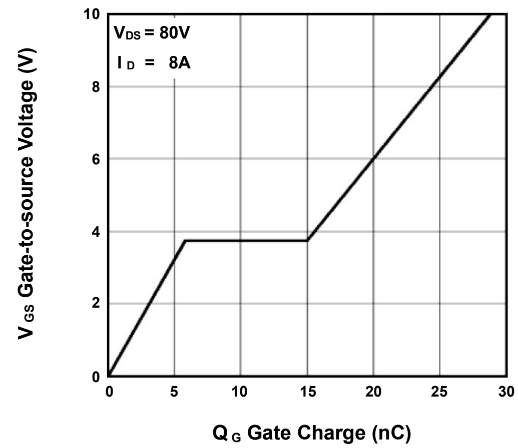


FIG.2-Gate Charge Characteristics

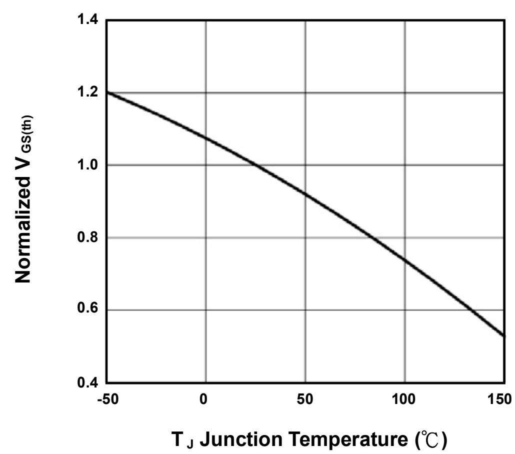


FIG.3-Normalized $V_{GS(th)}$ vs. T_J

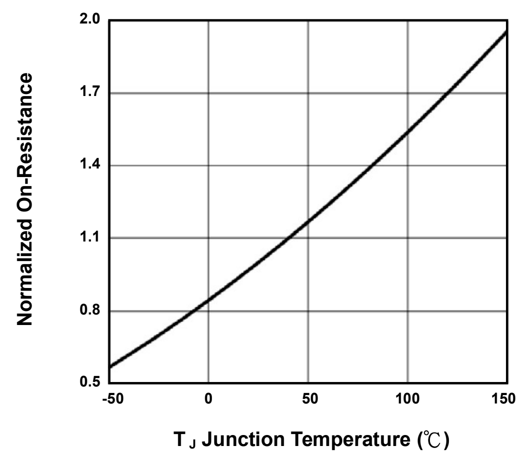


FIG.4-Normalized R_{DSON} vs. T_J

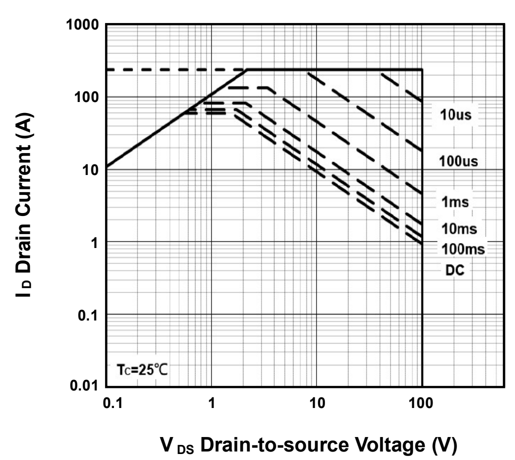


FIG.5-Safe Operating Area

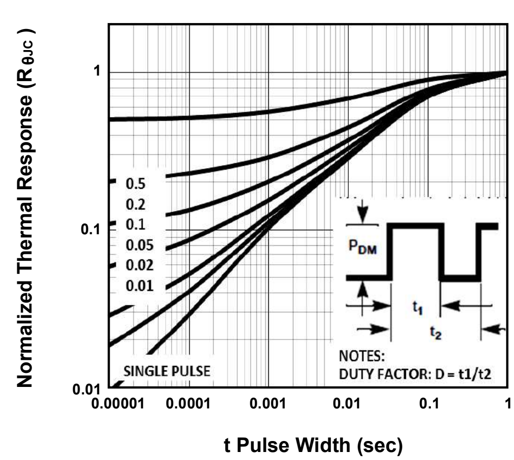


FIG.6-Transient Thermal Impedance

MSD100N110SC

N-Channel 100-V (D-S) MOSFET

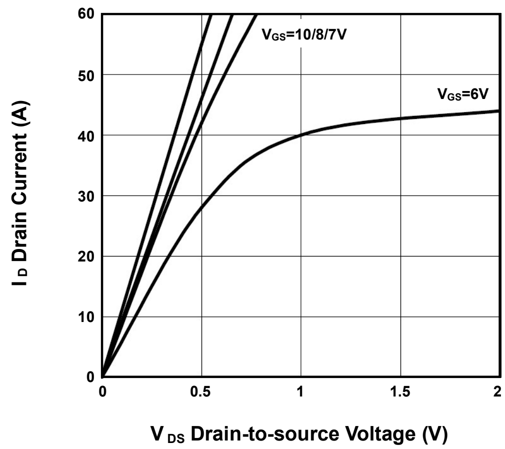


FIG.7-Typical Output Characteristics

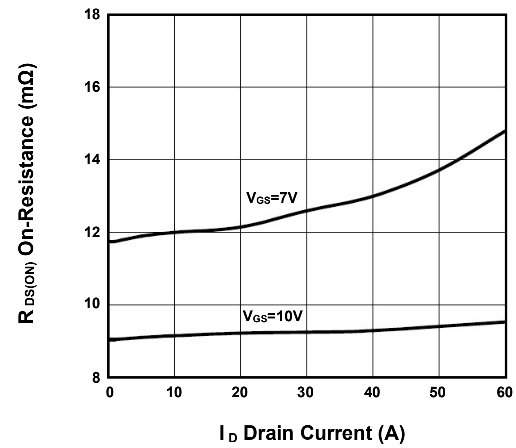


FIG.8-On-Resistance vs. Drain Current

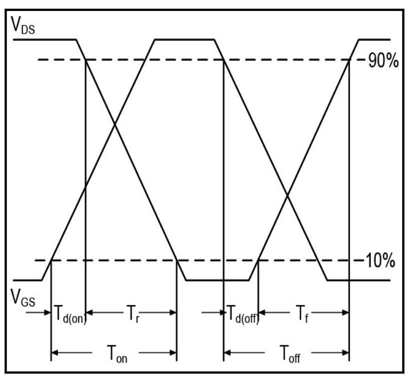


FIG.9-Switching Time Waveform

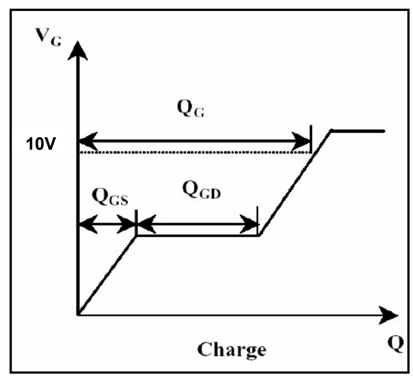


FIG.10-Gate Charge Waveform

MSD100N110SC

N-Channel 100-V (D-S) MOSFET

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE. Bruckewell Technology Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Bruckewell”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product. Bruckewell makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Bruckewell disclaims

(i) Any and all liability arising out of the application or use of any product.

(ii) Any and all liability, including without limitation special, consequential or incidental damages.

(iii) Any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Bruckewell’s knowledge of typical requirements that are often placed on Bruckewell products in generic applications.

Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time.

Product specifications do not expand or otherwise modify Bruckewell’s terms and conditions of purchase, including but not limited to the warranty expressed therein.