

MSW11N90

900V N-Channel MOSFET

Description

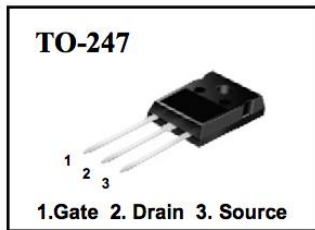
This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies.

Features

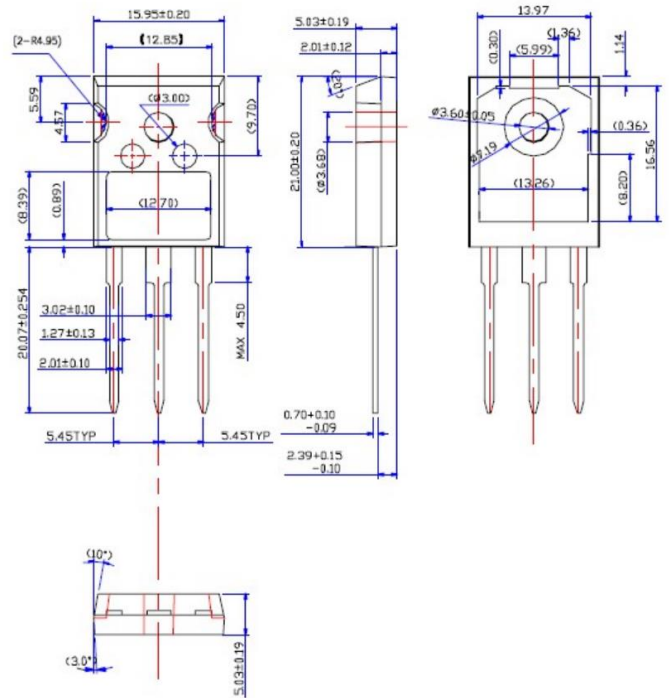
- RDS(on) (Max 1.1 Ω)@VGS=10V
- Gate Charge (Typical 70nC)
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range (150°C)
- RoHS compliant package

Packing & Order Information

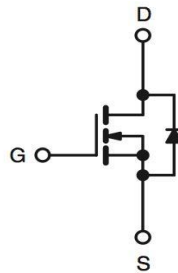
30/Tube ; 540/Box



RoHS
COMPLIANT



Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	900	V
V _{GS}	Gate-Source Voltage	±30	V
I _D	Drain Current -Continuous (TC=25°C)	11	A
	Drain Current -Continuous (TC=100°C)	6.6	A
I _{DM}	Drain Current Pulsed	44	A
E _{AS}	Single Pulsed Avalanche Energy	1280	mJ
E _{AR}	Repetitive Avalanche Energy	30	mJ
P _D	Power Dissipation (TC = 25 °C)	300	W
	- Derate above 25°C	2.38	W/°C
dV/dt	Peak Diode Recovery dV/dt	4	V/ns

MSW11N90

900V N-Channel MOSFET

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

Symbol	Parameter	Value	Unit
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C
T _L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

• Drain current limited by maximum junction temperature

Thermal Resistance Characteristics

Symbol	Parameter	Max.	Units
R _{θJC}	Junction-to-Case	0.42	°C/W
R _{θJA}	Junction-to-Ambient	40	

On Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
V _{GS}	V _{DS} = V _{GS} , I _D = 250μA	3.0	--	5.0	V
*R _{DS(ON)}	V _{GS} = 10 V, I _D = 5.5 A	--	0.9	1.1	Ω

Off Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
BV _{DSS}	V _{GS} = 0 V, I _D = 250μA	900	--	--	V
ΔBV _{DSS} /ΔT _J	I _D = 250μA, Referenced to 25°C	--	1.0	--	V/°C
I _{DSS}	V _{DS} = 900 V, V _{GS} = 0 V V _{DS} = 720 V, V _C = 125°C	--	--	10 100	μA
I _{GSSF}	V _{GS} = 30 V, V _{DS} = 0 V	--	--	100	nA
I _{GSSR}	V _{GS} = -30 V, V _{DS} = 0 V	--	--	-100	nA

Switching Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
t _{d(on)}	V _{DS} = 450 V, I _D = 11 A, R _G = 25 Ω	--	70	--	ns
t _r		--	150	--	ns
t _{d(off)}		--	150	--	ns
t _f		--	90	--	ns
Q _g	V _{DS} = 720 V, I _D = 11 A, V _{GS} = 10 V	--	70	--	nC
Q _{gs}		--	15	--	nC
Q _{gd}		--	30	--	nC
C _{ISS}	V _{DS} = 25 V, V _{GS} = 0 V, F = 1.0MHz	--	3000	--	pF
C _{OSS}		--	250	--	pF
C _{RSS}		--	25	--	pF

MSW11N90

900V N-Channel MOSFET

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
I_S			--	--	11	A
I_{SM}			--	--	44	
V_{SD}	$I_S = 11\text{ A}$, $V_{GS} = 0\text{ V}$		--	--	1.4	V
t_{rr}	$I_S = 11\text{ A}$, $V_{GS} = 0\text{ V}$		--	1200	--	ns
Q_{rr}	$diF/dt = 100\text{A}/\mu\text{s}$		--	20	--	μC

Notes;

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $L = 20\text{mH}$, $I_{AS}=11\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$
3. $I_{SD}\leq 11\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$
4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
5. Essentially Independent of Operating Temperature

MSW11N90

900V N-Channel MOSFET

■ Typical Characteristics

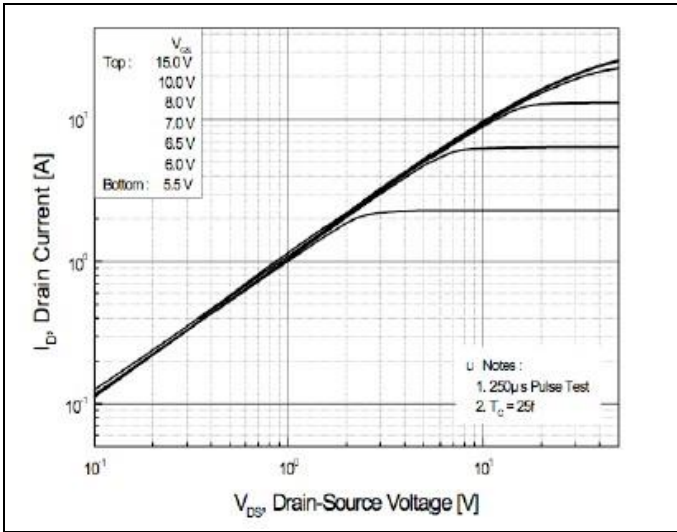


FIG.1-ON REGION CHARACTERISTICS

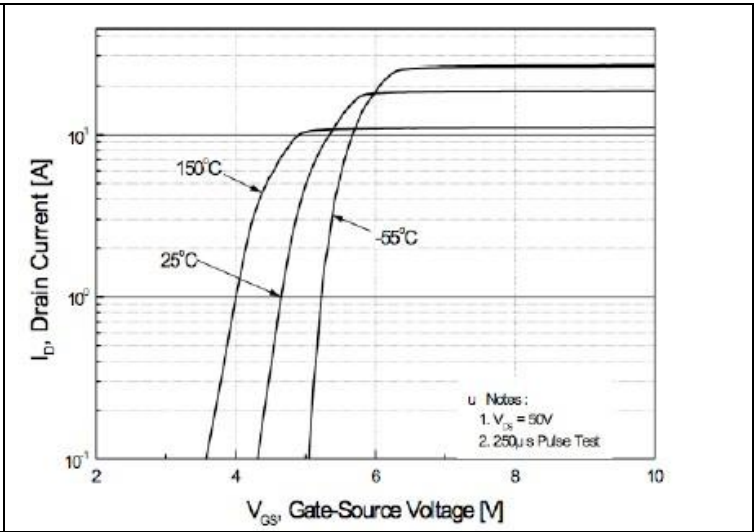


FIG.2-TRANSFER CHARACTERISTICS

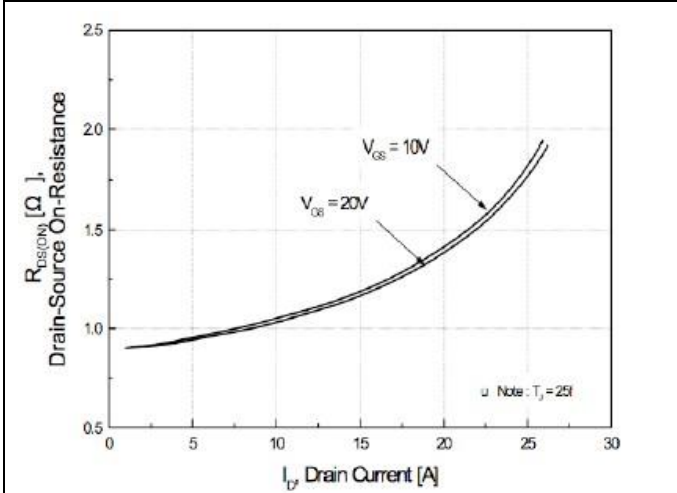


FIG.3-ON RESISTANCE VARIATION VS DRAIN CURRENT AND GATE VOLTAGE

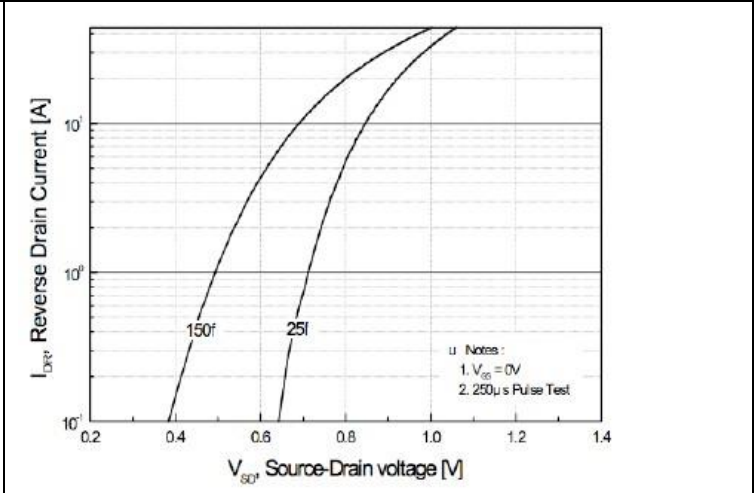


FIG.4-BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE

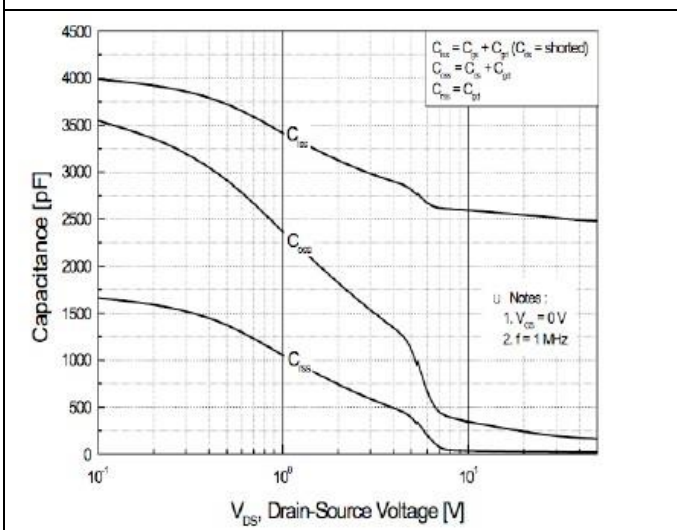


FIG.5-CAPACITANCE CHARACTERISTICS

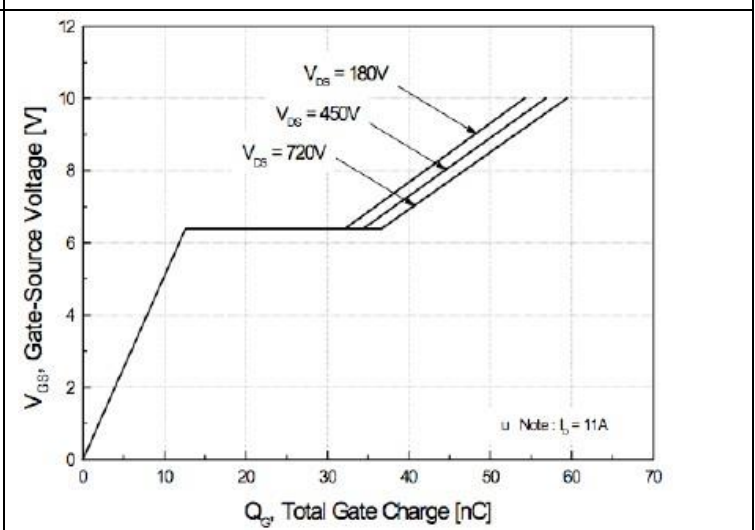


FIG.6-GATE CHARGE CHARACTERISTICS

MSW11N90

900V N-Channel MOSFET

Typical Characteristics

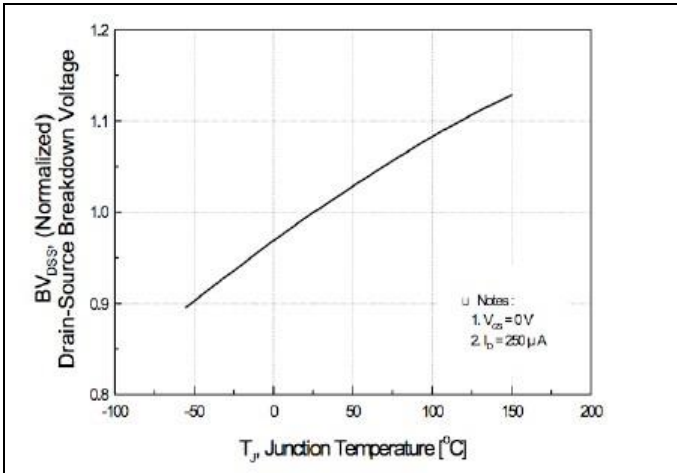


FIG.7-BREAKDOWN VOLTAGE VARIATION VS TEMPERATURE

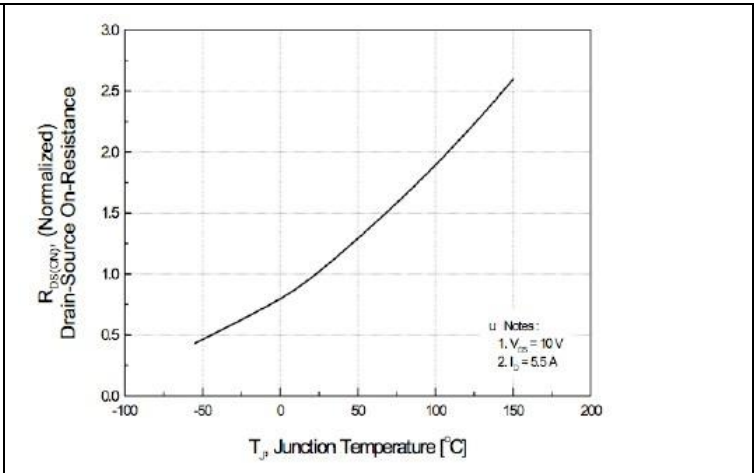


FIG.8-ON-RESISTANCE VARIATION VS TEMPERATURE

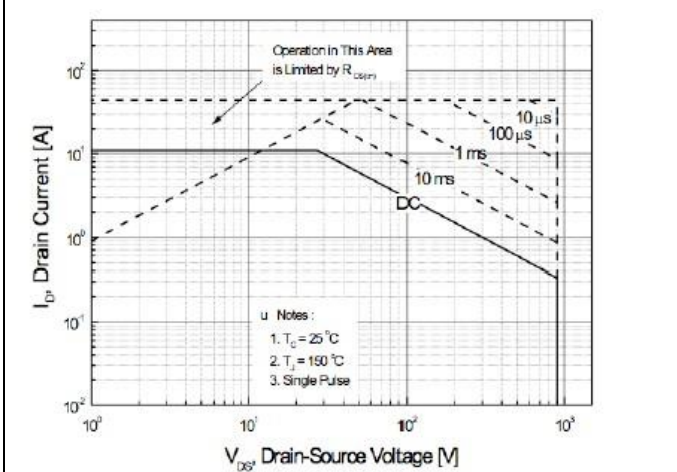


FIG.9-MAXIMUM SAFE OPERATING AREA

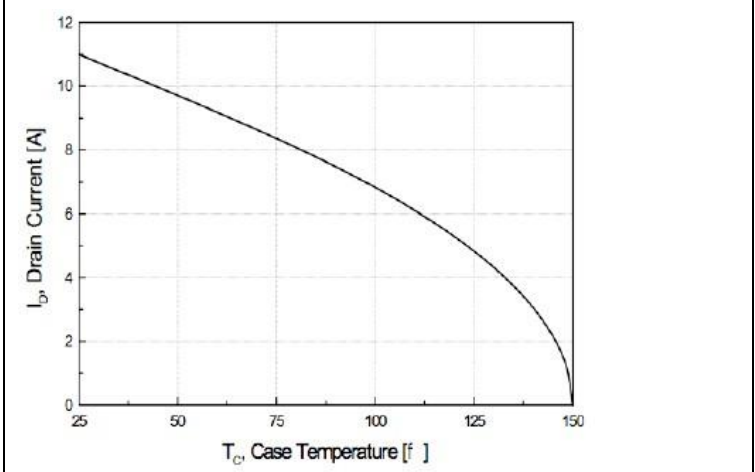


FIG.10-MAXIMUM DRAIN CURRENT VS CASE TEMPERATURE

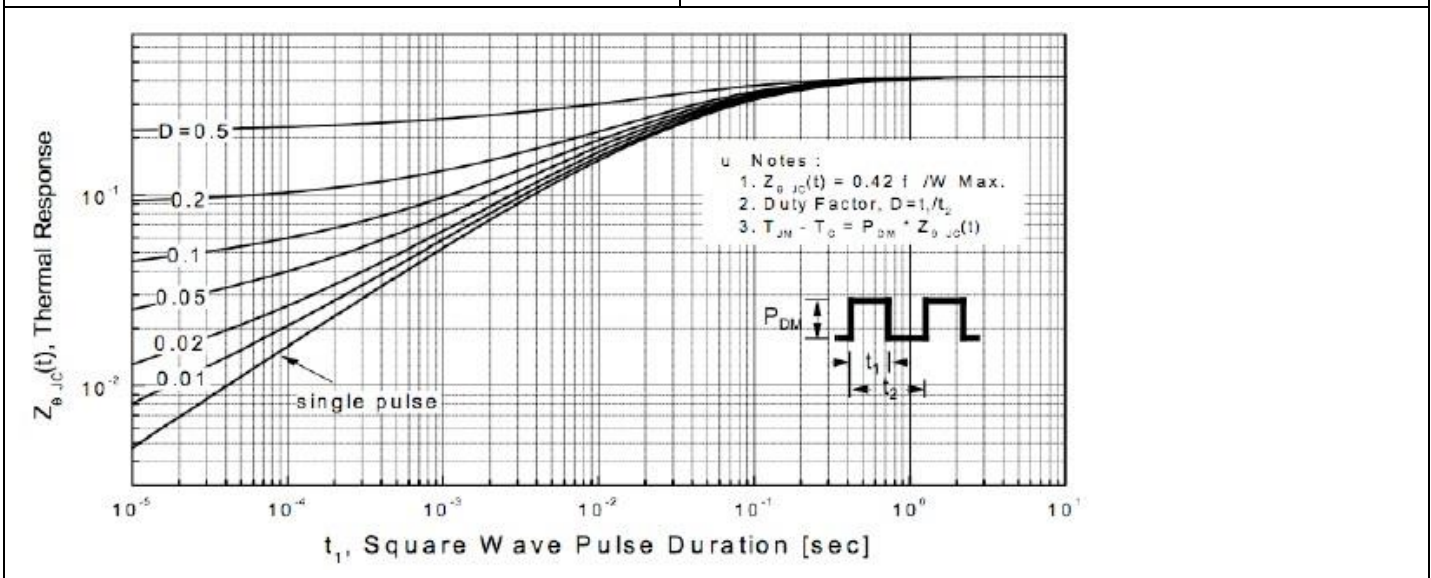


FIG.11-TRANSIENT THERMAL RESPONSE CURVE

MSW11N90

900V N-Channel 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.