

# Preliminary MSW10N80

## 800V N-Channel MOSFET

### Description

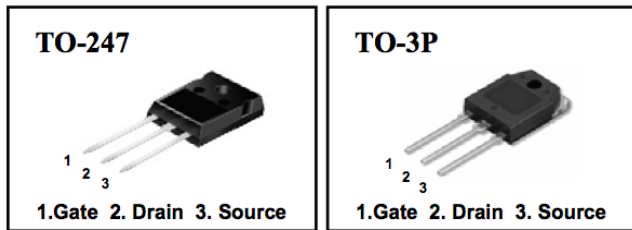
This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies.

### Features

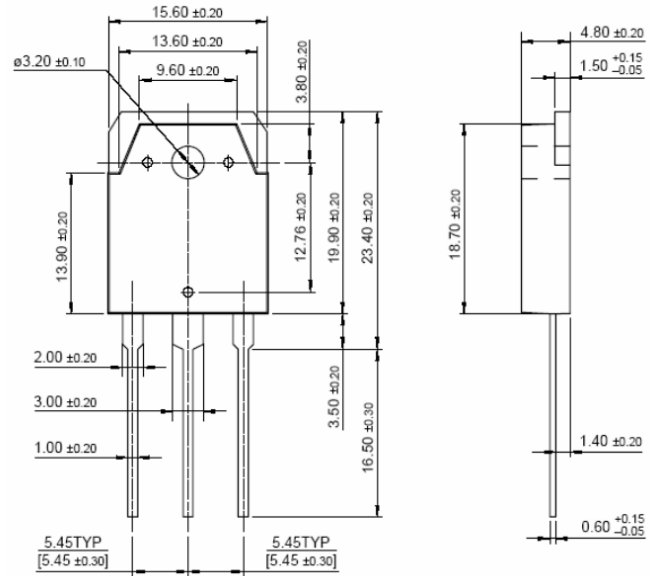
- RDS(on) (typ 0.65 Ω )@VGS=10V
- Gate Charge (Typical 55nC)
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range (150°C)
- RoHS compliant package

### Packing & Order Information

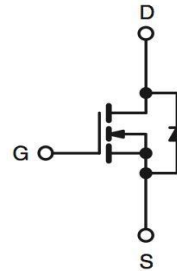
30/Tube ; 540/Box



**RoHS**  
COMPLIANT



### Graphic symbol



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter	Value	Unit
V <sub>DSS</sub>	Drain-Source Voltage	800	V
V <sub>GS</sub>	Gate-Source Voltage	±30	V
I <sub>D</sub>	Drain Current -Continuous (TC=25°C)	10	A
	Drain Current -Continuous (TC=100°C)	6.3	A
I <sub>DM</sub>	Drain Current Pulsed	40	A
E <sub>AS</sub>	Single Pulsed Avalanche Energy	920	mJ
E <sub>AR</sub>	Repetitive Avalanche Energy	24	mJ
dV/dt	Peak Diode Recovery dV/dt	4	V/ns
P <sub>D</sub>	Power Dissipation (TC = 25 °C)	240	W
	- Derate above 25°C	1.92	W/°C
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C

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

Symbol	Parameter	Value	Unit
TL	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 <sub>θJC</sub>	Junction-to-Case	0.5	°C/W
R <sub>θJA</sub>	Junction-to-Ambient	40	

### On Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
V <sub>GS</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	3.0	--	5.0	V
*R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 5 A	--	0.9	1.1	Ω

### Off Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
BV <sub>DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250μA	800	--	--	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	I <sub>D</sub> = 250μA, Referenced to 25°C	--	0.98	--	V/°C
I <sub>DSS</sub>	V <sub>DS</sub> = 900 V, V <sub>GS</sub> = 0 V V <sub>DS</sub> = 720 V, V <sub>C</sub> = 125°C	--	--	10 100	μA
I <sub>GSSF</sub>	V <sub>GS</sub> = 30 V, V <sub>DS</sub> = 0 V	--	--	100	nA
I <sub>GSSR</sub>	V <sub>GS</sub> = -30 V, V <sub>DS</sub> = 0 V	--	--	-100	nA

### Switching Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
t <sub>d(on)</sub>	V <sub>DS</sub> = 400 V, I <sub>D</sub> = 10 A, R <sub>G</sub> = 25 Ω	--	60	--	ns
t <sub>r</sub>		--	150	--	ns
t <sub>d(off)</sub>		--	120	--	ns
t <sub>f</sub>		--	120	--	ns
Q <sub>g</sub>	V <sub>DS</sub> = 640 V, I <sub>D</sub> = 10 A, V <sub>GS</sub> = 10 V	--	58	--	nC
Q <sub>gs</sub>		--	17.5	--	nC
Q <sub>gd</sub>		--	22	--	nC
C <sub>ISS</sub>	V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0 V, F = 1.0MHz	--	2800	--	pF
C <sub>OSS</sub>		--	230	--	pF
C <sub>RSS</sub>		--	20	--	pF

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### Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
$I_S$			--	--	10	A
$I_{SM}$			--	--	40	
$V_{SD}$	$I_S = 9\text{ A}$ , $V_{GS} = 0\text{ V}$		--	--	1.4	V
$t_{rr}$	$I_S = 9\text{ A}$ , $V_{GS} = 0\text{ V}$		--	950	--	ns
$Q_{rr}$	$diF/dt = 100\text{A}/\mu\text{s}$		--	14	--	$\mu\text{C}$

#### Notes;

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2.  $I_{AS}=10\text{A}$ ,  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$
3.  $I_{SD}\leq 10\text{A}$ ,  $di/dt\leq 200\text{A}/\mu\text{s}$ ,  $V_{DD}\leq BV_{DSS}$ , 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

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