

Preliminary MSW20N60

500V N-Channel MOSFET

Description

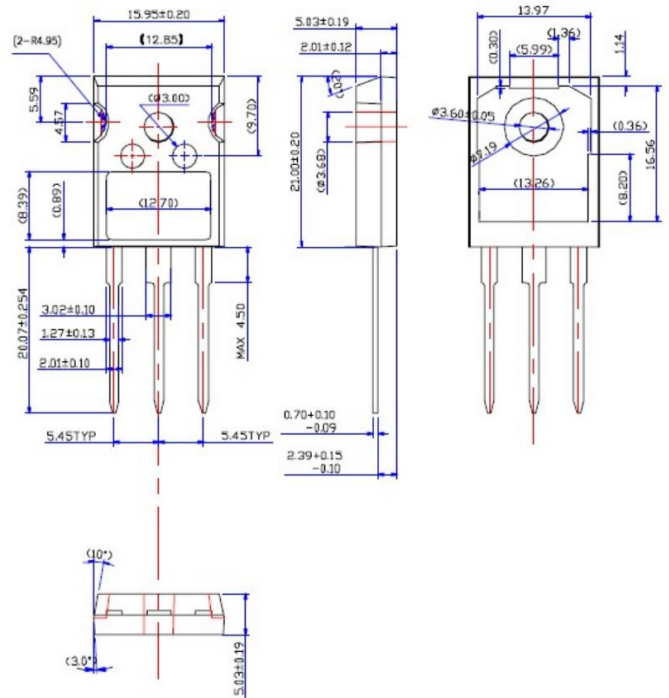
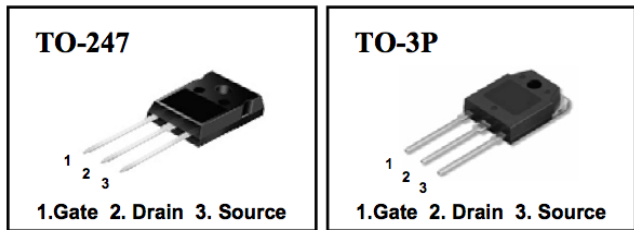
This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies.

Features

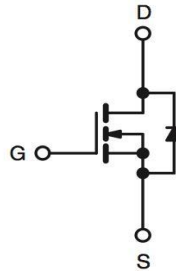
- RDS(on) (Typical 0.26Ω) @VGS=10V
- Gate Charge (Typical 80nC)
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range (150°C)
- RoHS compliant package

Packing & Order Information

30/Tube ; 540/Box



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	600	V
V _{GS}	Gate-Source Voltage	±30	V
I _D	Drain Current -Continuous (TC=25°C)	20	A
	Drain Current -Continuous (TC=100°C)	12	A
I _{DM}	Drain Current Pulsed	80	A
E _{AS}	Single Pulsed Avalanche Energy	1310	mJ
E _{AR}	Repetitive Avalanche Energy	32	mJ
dV/dt	Peak Diode Recovery dV/dt	4.5	V/ns
P _D	Power Dissipation (TC = 25 °C)	320	W
	- Derate above 25°C	2.56	W/°C
T _J , T _{STG}	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 _{θJC}	Junction-to-Case	0.39	°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	2.0	3.0	4.0	V
*R _{DS(ON)}	V _{GS} = 10 V, I _D = 10 A	--	0.26	0.32	Ω

Off Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
BV _{DSS}	V _{GS} = 0 V, I _D = 250μA	600	--	--	V
ΔBV _{DSS} /ΔT _J	I _D = 250μA, Referenced to 25°C	--	0.6	--	V/°C
I _{DSS}	V _{DS} = 500 V, V _{GS} = 0 V V _{DS} = 400 V, V _{GS} = 0 V, T _J = 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} = 300 V, I _D = 20 A, R _G = 25 Ω	--	60	--	ns
t _r		--	200	--	ns
t _{d(off)}		--	130	--	ns
t _f		--	125	--	ns
Q _g	V _{DS} = 480 V, I _D = 20 A, V _{GS} = 10 V	--	80	--	nC
Q _{gs}		--	18	--	nC
Q _{gd}		--	36	--	nC
C _{ISS}	V _{DS} = 25 V, V _{GS} = 0 V, F = 1.0MHz	--	3200	--	pF
C _{OSS}		--	410	--	pF
C _{RSS}		--	41	--	pF

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Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
I_S			--	--	20	A
I_{SM}			--	--	80	
V_{SD}	$I_S = I_F, V_{GS} = 0\text{ V}$		--	--	1.4	V
t_{rr}	$I_S = 20\text{ A}, V_{GS} = 0\text{ V}$		--	400	--	ns
Q_{rr}	$diF/dt = 100\text{ A}/\mu\text{s}$		--	5.0	--	uC

Notes;

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $L = 6.0\text{mH}$, $I_{AS}=20\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$
3. $I_{SD}\leq 20\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, 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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