Preliminary MSW9N90

900V N-Channel MOSFET

Description

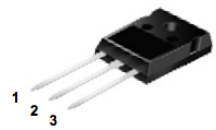
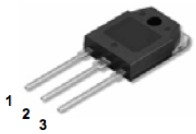
This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies.

Features

- RDS(on) (Max 1.4 Ω)@VGS=10V
- Gate Charge (Typical 45nC)
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range (150˚C)
- RoHS compliant package

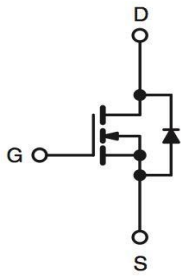
Packing & Order Information

30/Tube ; 540/Box

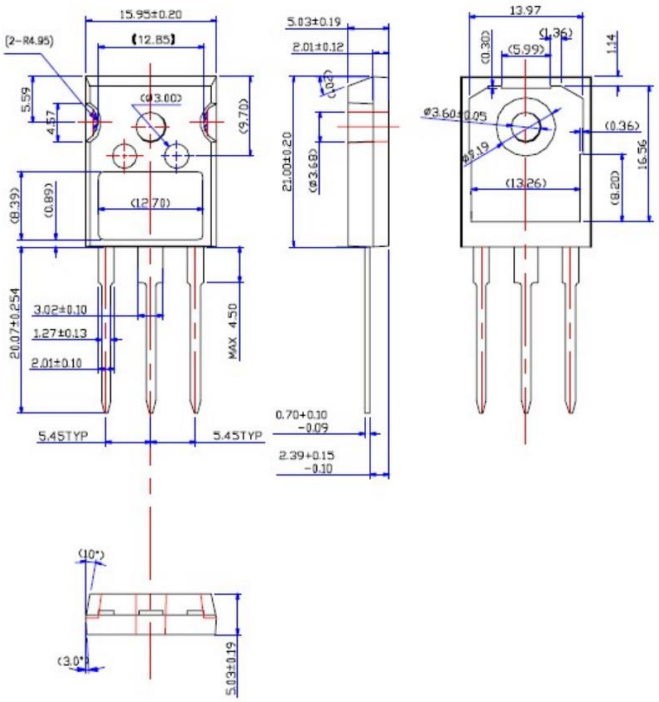
TO-247	TO-3P
	
1.Gate 2. Drain 3. Source	1.Gate 2. Drain 3. Source

RoHS COMPLIANT

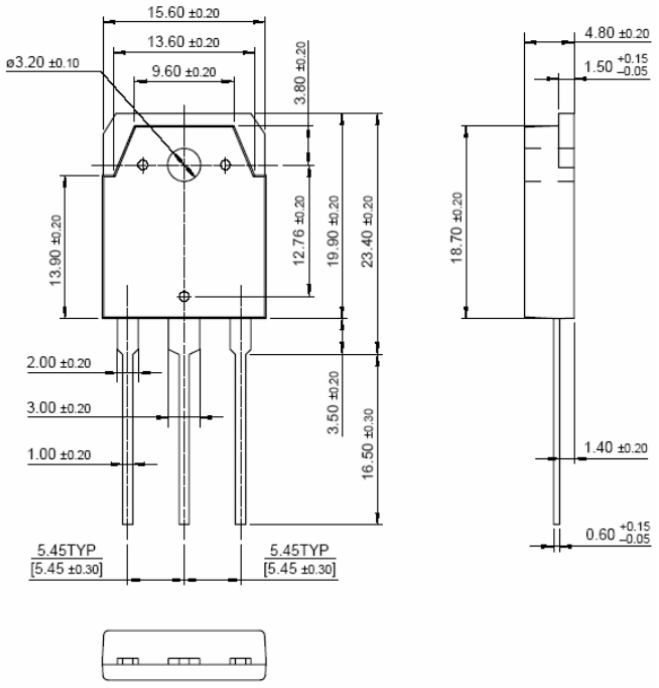
Graphic symbol



TO-247



TO-3P



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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)	9	A
	Drain Current -Continuous (TC=100°C)	5.7	A
I_{DM}	Drain Current Pulsed	36	A
E_{AS}	Single Pulsed Avalanche Energy	900	mJ
E_{AR}	Repetitive Avalanche Energy	28	mJ
dV/dt	Peak Diode Recovery dV/dt	4	V/ns
P_D	Power Dissipation (TC = 25 °C)	280	W
	- Derate above 25°C	2.22	W/°C
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
$R_{\theta JC}$	Junction-to-Case	0.45	°C/W
$R_{\theta JA}$	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 = 4.5 A	--	1.05	1.4	Ω

Off Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
BV_{DSS}	V_{GS} = 0 V , I_D=250μA	900	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	I_D = 250μA, Referenced to 25°C	--	0.99	--	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

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Switching Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
$t_{d(on)}$	V_{DS} = 450 V, I_D = 9 A, R_G = 25 Ω	--	50	--	ns
t_r		--	120	--	ns
$t_{d(off)}$		--	100	--	ns
tf		--	80	--	ns
Q_g	V_{DS} = 720 V,I_D = 9 A, V_{GS} = 10 V	--	45	--	nC
Q_{gs}		--	14	--	nC
Q_{gd}		--	18	--	nC

Dynamic Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
C_{ISS}	V_{DS} = 25 V, V_{GS} = 0 V, F = 1.0MHz	--	2200	--	pF
C_{OSS}		--	180	--	pF
C_{RSS}		--	15	--	pF

Source-Drain Diode Maximum Ratings and Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
I_S			--	--	9	A
I_{SM}			--	--	36	
V_{SD}	I_S = 9 A , V_{GS} = 0 V		--	--	1.5	V
t_{rr}	I_S = 9 A , V_{GS} = 0 V diF/dt = 100A/μs		--	550	--	ns
Q_{rr}			--	6.5	--	μC

Notes;

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L= 21mH, I_{AS}=9A, V_{DD}=50V, R_G=25Ω, Starting T_J=25℃
3. I_{SD}≦9A, di/dt≦200A/μs,V_{DD}≦BV_{DSS}, Starting T_J=25℃
4. Pulse Test: Pulse Width ≦ 300μs, Duty Cycle≦ 2%
5. Essentially Independent of Operating Temperature

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