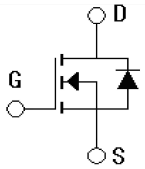
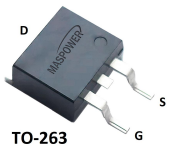
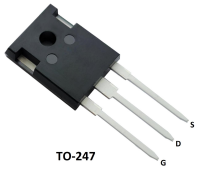
Features

- Very low $R_{DS(on)}$
- Very low Qg
- 100% avalanche tested
- Easy to use/drive
- RoHS compliant







Applications

- Uninterruptible Power Supply
- Power Factor Correction

Absolute Ratings (Tc=25℃)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	900	V
Transient Gate-Source Voltage	V_{GSM}	±30	V
Continuous Gate-Source Voltage	V_{GSS}	±20	V
Drain Current-continuous	I_D,T=25℃	30	A
	T=100℃	22	A
Drain Current-pulse (note 1)	I_{DM}	120	A
Single Pulsed Avalanche Energy (note 2)	E_{AS}	280	mJ
Repetitive Avalanche Energy(note 2)	E_{AR}	0.5	mJ
Avalanche Current	I_{AR}	7.5	A
Power Dissipation	P_D,TC=25℃	240	W
	Derate above 25℃	1.92	W/℃
Operating and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	I_D=250μA,V_{GS}=0V	900	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=900V,V_{GS}=0V	-	-	1	μA
		V_{DS}=900V，T_C=150℃	-	-	100	μA
Gate body leakage current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V	-	-	±100	nA
On-Characteristics						

Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2.7	3.8	5.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=15V,I_D=20A	-	167	222	mΩ
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, f=1.0MHZ	-	2840	-	pF
Output capacitance	C_{oss}		-	220	-	pF
Reverse transfer capacitance	C_{rss}		-	16	-	pF
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DD}=400V,I_D=30A, R_G=25Ω	-	49	-	ns
Turn-On rise time	t_r		-	42	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	166	-	ns
Turn-Off rise time	t_f		-	23	-	ns
Total Gate Charge	Q_g	V_{DS}=720V,I_D=30A, V_{GS}=10V	-	62	-	nC
Gate-Source charge	Q_{gs}		-	15	-	nC
Gate-Drain charge	Q_{gd}		-	23	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Body Diode Forward Current	I_{SD}	T_C=25℃	-	-	30	A
Body Diode Forward Voltage	V_{SD}	I_{SD}=1A,V_{GS}=0V	-	0.68	1.2	V
Reverse recovery time	t_{rr}	V_R=400,I_F=30A dI$_F$/dt=100A/μs	-	680	-	ns
Reverse recovery charge	Q_{rr}		-	9	-	μC
Peak Reverse Recovery Current	I_{rrm}		-	24	-	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case,Max.	R_{th}(j-C)	0.52	℃/W
Thermal Resistance,junction to Ambient,Max.	R_{th}(j-A)	62	℃/W

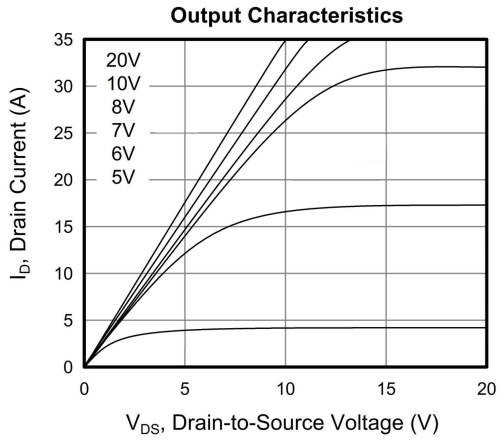
Notes:

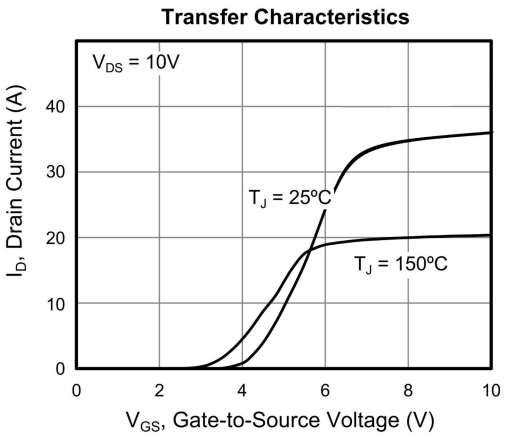
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_D = 10A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
3. Identical low side and high side switch with identical R_G

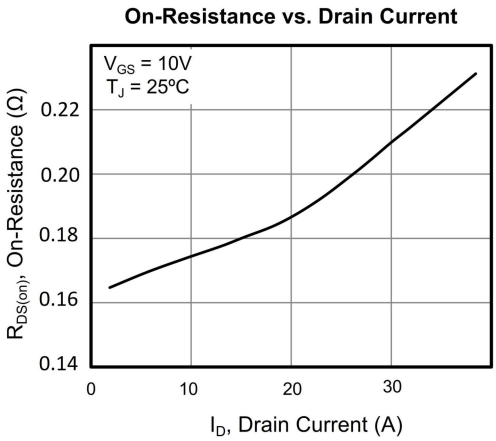
Order Message

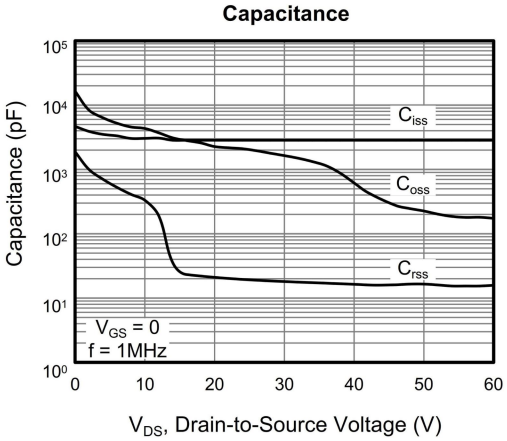
Marking	Package
MS30N90ICE0	TO-263
MS30N90ICC0	TO-247

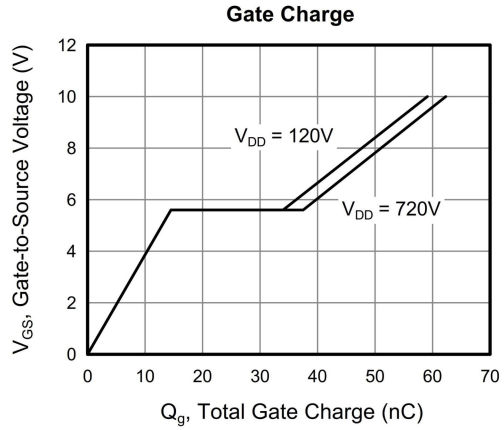
Typical Characteristics (TJ = 25° C, unless otherwise noted)

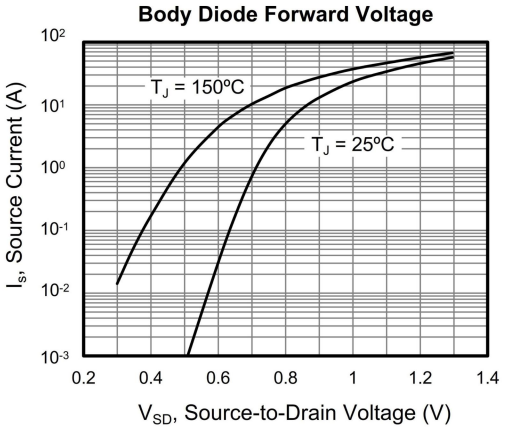


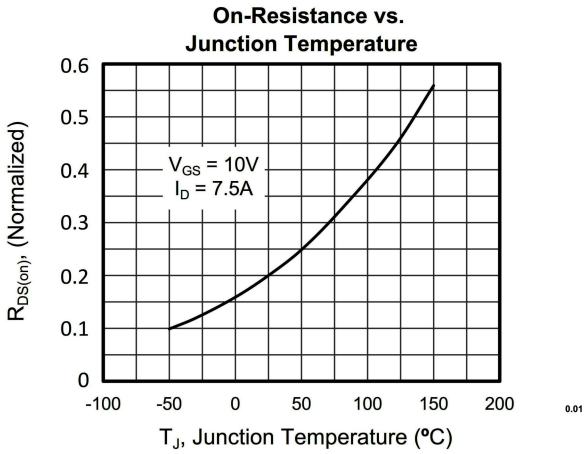


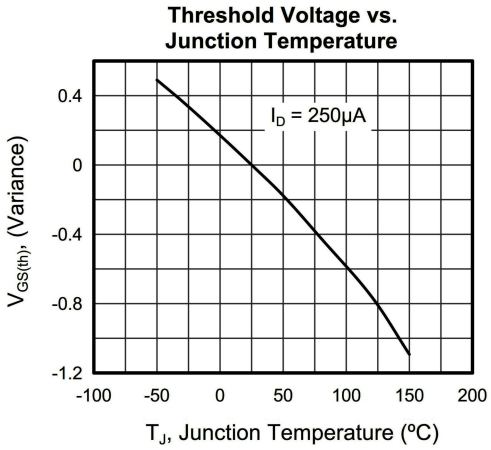


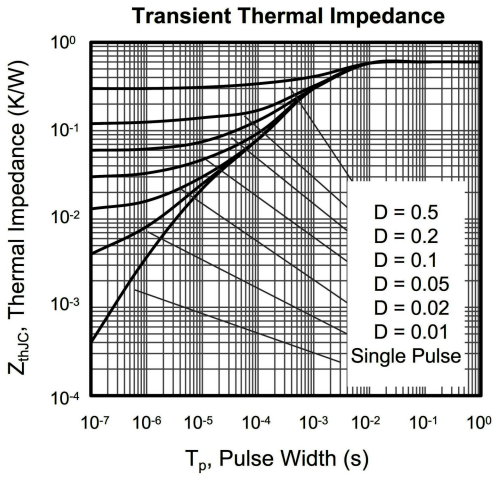


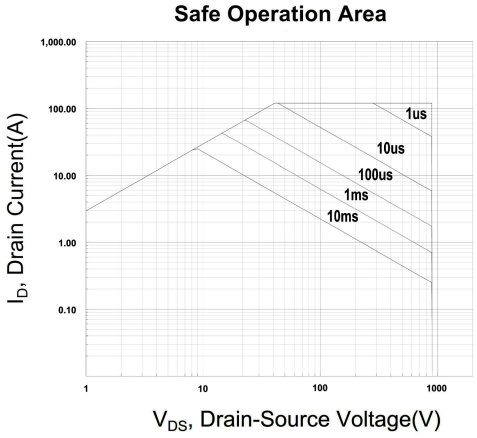




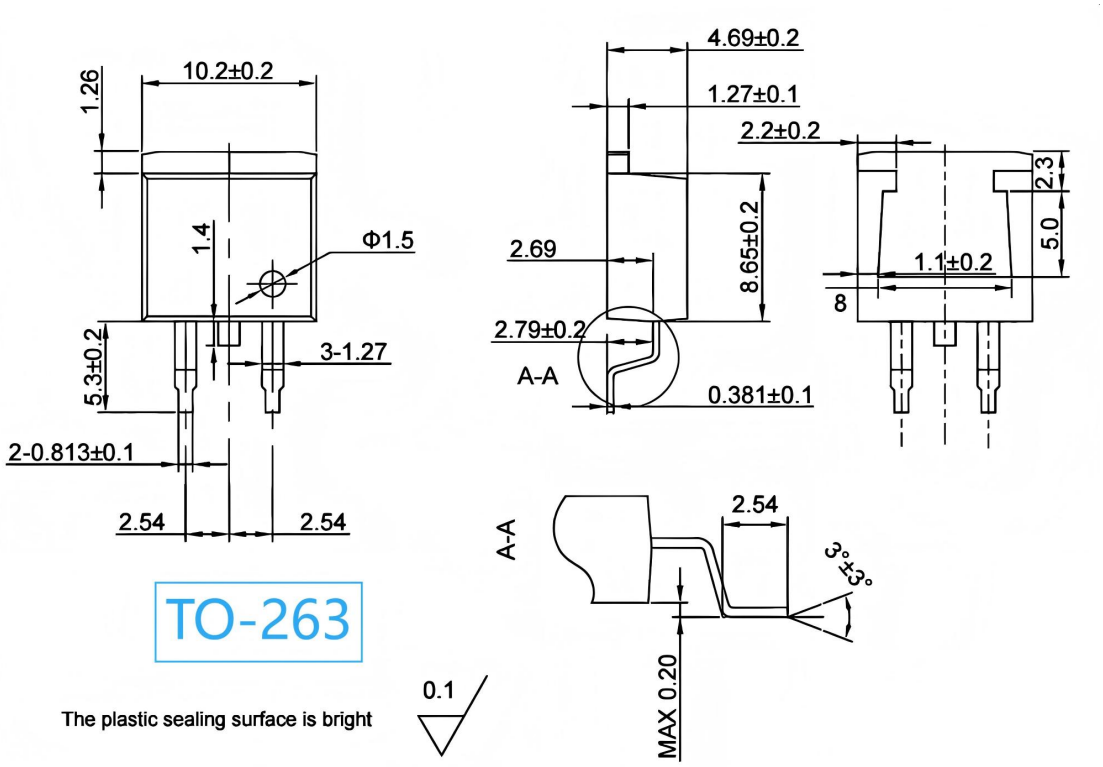

On-Resistance vs.
Junction Temperature
$R_{DS(on)}$, (Normalized)
V_{GS} = 10V
I_D = 7.5A
0.6
0.5
0.4
0.3
0.2
0.1
0
-100
-50
0
50
100
150
200
T_J, Junction Temperature (°C)


Threshold Voltage vs.
Junction Temperature
$V_{GS(th)}$, (Variance)
I_D = 250μA
0.4
0
-0.4
-0.8
-1.2
-100
-50
0
50
100
150
200
T_J, Junction Temperature (°C)


Transient Thermal Impedance
Z_{thJC}, Thermal Impedance (K/W)
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
D = 0.5
D = 0.2
D = 0.1
D = 0.05
D = 0.02
D = 0.01
Single Pulse
10^{-7}
10^{-6}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
10^{0}
T_p, Pulse Width (s)

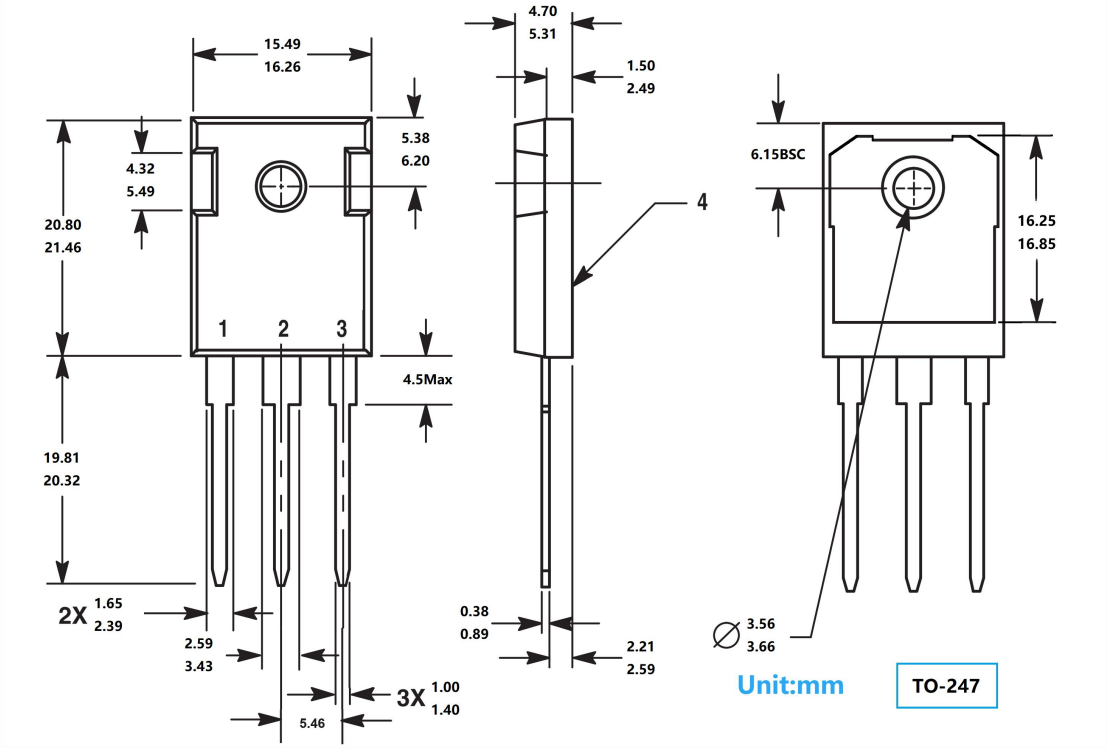

Safe Operation Area
I_D, Drain Current(A)
1,000.00
100.00
10.00
1.00
0.10
1us
10us
100us
1ms
10ms
1
10
100
1000
V_{DS}, Drain-Source Voltage(V)

Package Mechanical DATA



Notes:

1. Unmarked tolerance±0.15mm;unmarked R<0.15mm
2. The resin body is not allowed to have defects, shrinkage holes, cracks, bubbles and other harmful defects
3. The drawing indicates that the leg has reinforcement
4. Unit : mm


15.49
16.26
4.32
5.49
5.38
6.20
20.80
21.46
1
2
3
4.5Max
19.81
20.32
2X 1.65
2.39
2.59
3.43
3X 1.00
1.40
5.46
4.70
5.31
1.50
2.49
4
0.38
0.89
2.21
2.59
6.15BSC
16.25
16.85
∅ 3.56
3.66
Unit:mm
TO-247