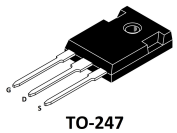
MS30N95HGC0

Features

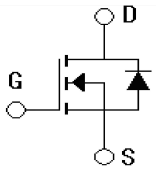
- V_{DS}=950V,I_D=30A
- $R_{DS(on),type}$=0.25Ω @15A
- avalanche tested and current rated
- Fast intrinsic Rectifier



TO-247

Applications

- High power density
- Easy to mount
- Space savings



Absolute Ratings (Tc=25℃)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	950	V
Transient Gate-Source Voltage	V_{GSM}	±30	V
Continuous Gate-Source Voltage	V_{GSS}	±20	V
Drain Current-continuous	I_D	30	A
Drain Current-pulse(note1)	I_{DM}	55	A
Single Pulsed Avalanche Energy(note2)	E_{AS}	750	mJ
Maximum Power Dissipation	P_D	290	W
Operating and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃
Maximum lead temperature for soldering purposes	T_L	300	℃
Isolation Voltage Between Case to Thermal	V_{ISO}	3.0	kV

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units

Drain-Source Voltage	BV_{DSS}	I_D=3mA,V_{GS}=0V	950	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=V_{DSS},V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V，V_{DS}=0V	-	-	±100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=2.5mA	3.0	-	5.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=15A (note3)	-	0.25	0.33	Ω
Forward Transconductance	g_{fs}	V_{DS}=10V,I_D=15A (note3)	-	31	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz(note4)	-	4690	-	pF
Output capacitance	C_{oss}		-	421	-	pF
Reverse transfer capacitance	C_{rss}		-	15	-	pF
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DS}=750V,I_D=4A, R_g=25Ω (note3,4)	-	76	-	ns
Turn-On rise time	t_r		-	52	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	338	-	ns
Turn-Off rise time	t_f		-	76	-	ns
Total Gate Charge	Q_g	V_{DS}=750V,I_D=4A, V_{GS}=10V (note4)	-	96	-	nC
Gate-Source charge	Q_{gs}		-	26	-	nC
Gate-Drain charge	Q_{gd}		-	31	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	V_{GS}=0V,I_S=15A (note3)	-	-	1.2	V
Diode Forward Current	I_S	TC=25℃	-	-	30	A
Reverse recovery time	T_{rr}	I_S=4A, di/dt=100A/μs V_R=950V,V_{GS}=0V	-	0.4	-	us
Reverse Recovery Charge	Q_{rr}		-	3.9	-	uC

Thermal Characteristics

Parameter	Symbol	Unit	
Thermal Resistance,junction to Case	R_{th}(j-C)	0.43	℃/W
Case to Sink Thermal Resistance, junction-Ambient	R_{th}(C-A)	40	

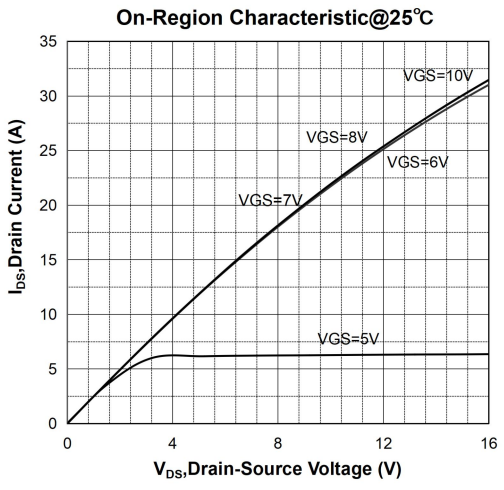
Order Message

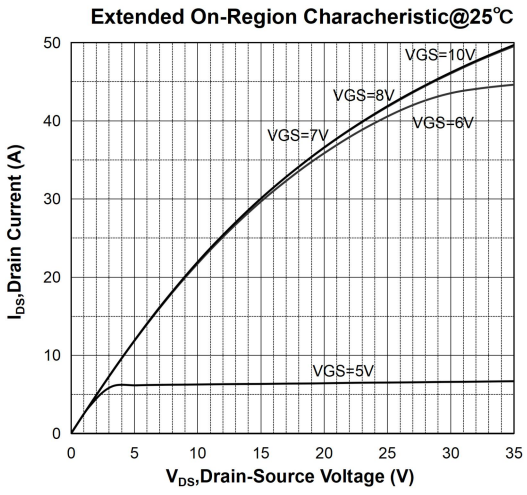
Marking	Package
MS30N95HGC0	TO-247

Notes:

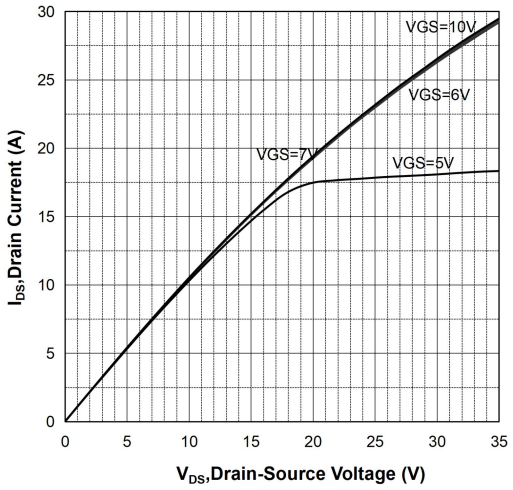
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 15 mH, IAS = 10 A, VDD = 50V, RG = 25 Ω, Starting TJ = 25°C
3. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 2%
4. Essentially independent of operating temperature

Electrical Characteristics

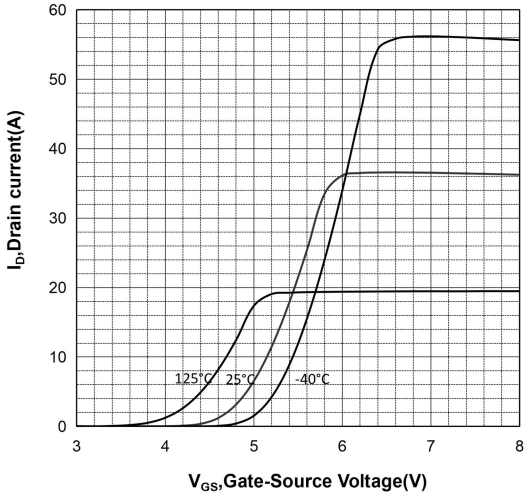




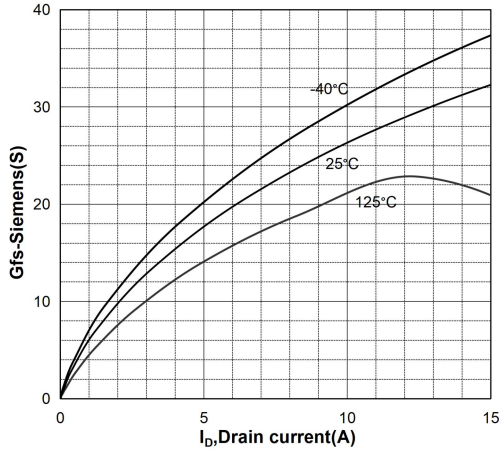
On-Region Characteristic@125℃



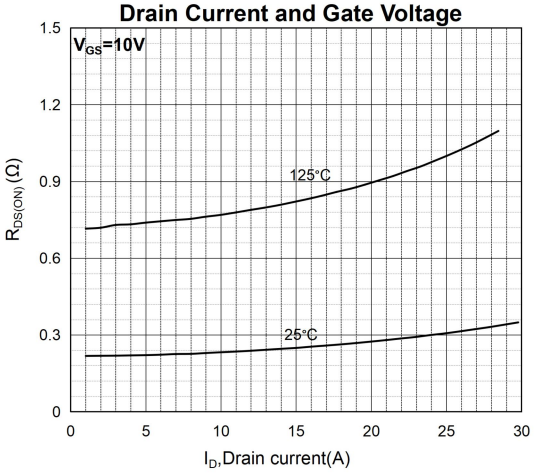
Transfer Characteristics



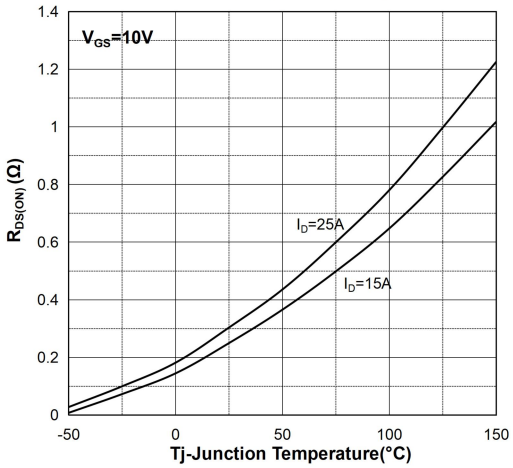
Transconductance



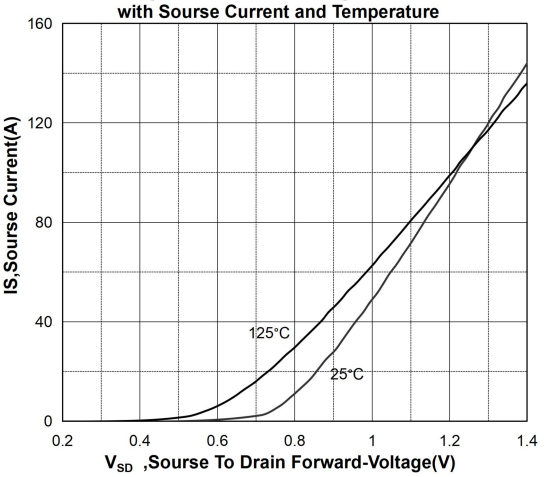
On-Resistance Variation vs Drain Current and Gate Voltage

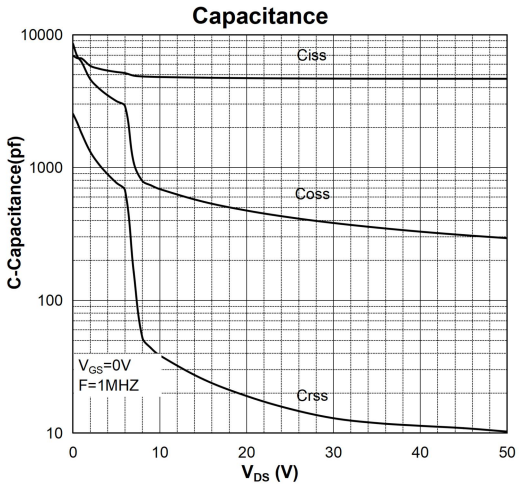


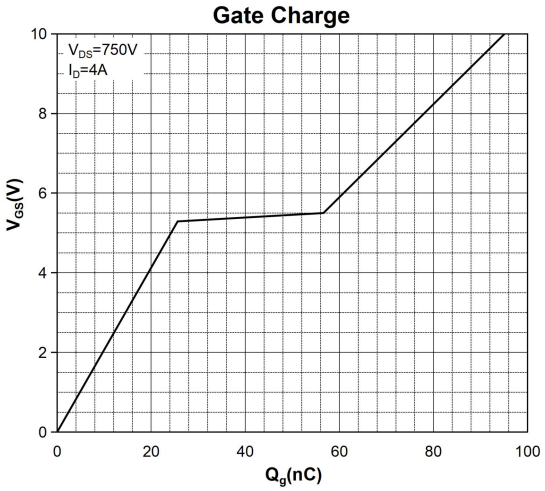
On-Resistance Variation vs Temperature

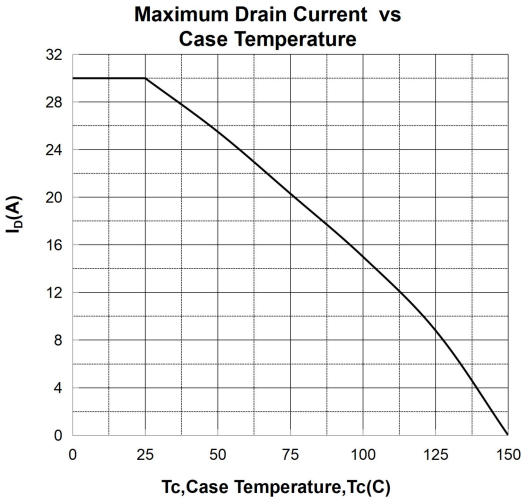


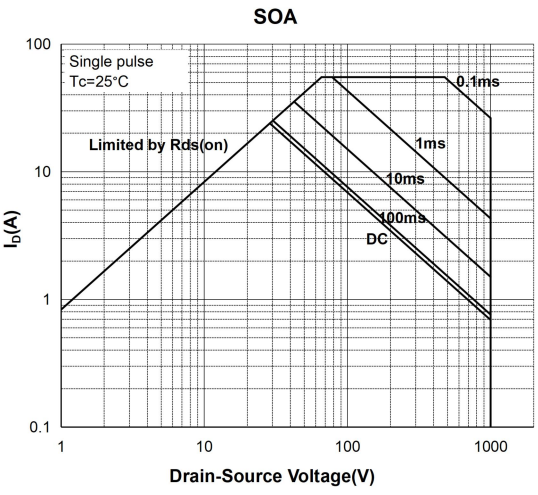
Body Diode Forward Voltage Variation with Sourse Current and Temperature

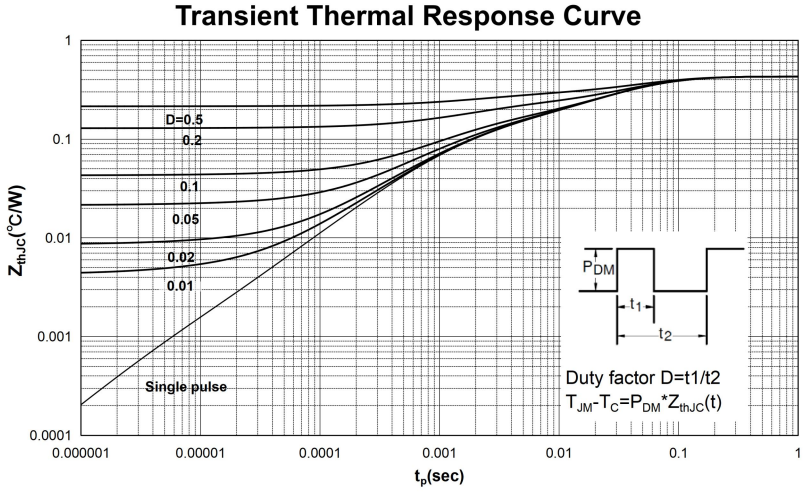



Capacitance
10000
1000
100
10
C-Capacitance(pf)
Ciss
Coss
Crss
VGS=0V
F=1MHZ
0
10
20
30
40
50
VDS (V)

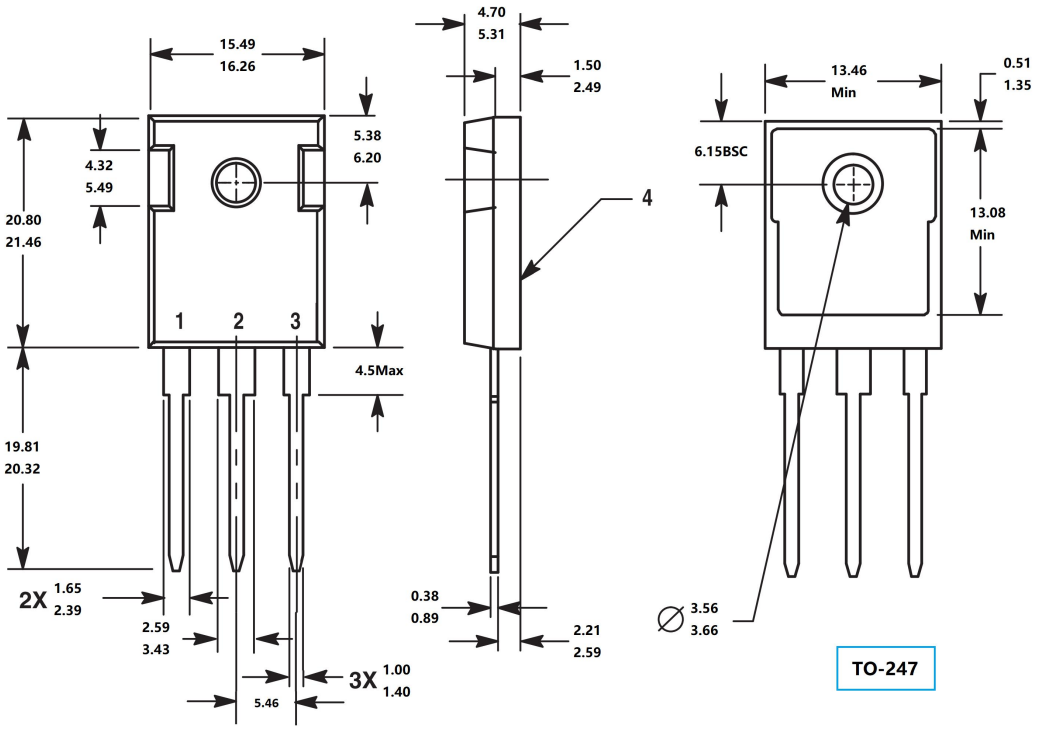

Gate Charge
VDS=750V
ID=4A
10
8
6
4
2
0
VGS(V)
0
20
40
60
80
100
Qg(nC)


Maximum Drain Current vs
Case Temperature
32
28
24
20
16
12
8
4
0
ID(A)
0
25
50
75
100
125
150
Tc,Case Temperature,Tc(C)


SOA
100
10
1
0.1
ID(A)
Single pulse
Tc=25°C
Limited by Rds(on)
0.1ms
1ms
10ms
100ms
DC
1
10
100
1000
Drain-Source Voltage(V)


Transient Thermal Response Curve
1
0.1
0.01
0.001
0.0001
ZthJC(°C/W)
D=0.5
0.2
0.1
0.05
0.02
0.01
Single pulse
PDM
t1
t2
Duty factor D=t1/t2
TJM-TC=PDM*ZthJC(t)
0.000001
0.00001
0.0001
0.001
0.01
0.1
1
tp(sec)

Package Mechanical DATA



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