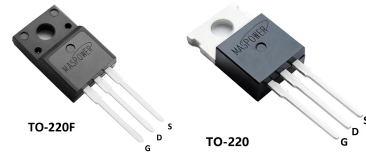


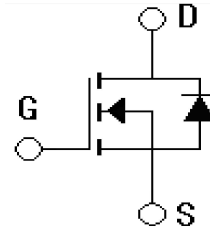
Features

- Low Crss (typical 22pF)
- Low gate charge
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product



Applications

- UPS
- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge



Absolute Ratings (Tc=25°C)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DSS}	400	V
Gate-Source Voltage	V _{GSS}	±30	V
Drain Current-continuous	I _D	10	A
Drain Current-pulse	I _{DM}	30	A
Single Pulsed Avalanche Energy	E _{AS}	450	mJ
Maximum Power Dissipation(TO-220)	PD	134	W
Maximum Power Dissipation(TO-220F)	PD	68	
Operating and Storage Temperature Range	T _J , T _{STG}	-55~+150	°C

*Drain current limited by maximum junction temperature

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV _{DSS}	I _D =0.25mA, V _{GS} =0V	400	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =V _{DSS} , V _{GS} =0V	-	-	10	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=0.25mA$	2.0	-	4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5A$	-	0.43	0.54	Ω
Forward Transconductance	g_{fs}	$V_{DS}=40V, I_D=5A$	-	9.6	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHZ$	-	650	809	pF
Output capacitance	C_{oss}		-	70	95	pF
Reverse transfer capacitance	C_{rss}		-	25	33	pF

Electrical Characteristics($T_{CASE}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{DS}=200V, I_D=10A, R_G=25\Omega$	-	20	50	ns
Turn-On rise time	t_r		-	80	170	ns
Turn-Off delay time	$t_{d(off)}$		-	125	260	ns
Turn-Off rise time	t_f		-	85	180	ns
Total Gate Charge	Q_g	$V_{DS}=320V, I_D=10A, V_{GS}=10V$	-	19.7	25.6	nC
Gate-Source charge	Q_{gs}		-	7.38	-	nC
Gate-Drain charge	Q_{gd}		-	4.66	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	$V_{GS}=0V, I_S=10A$	-	1.5	-	V
Diode Forward Current	I_S	$TC=25^{\circ}C$	-	-	10	A
Reverse recovery time	T_{rr}	$I_S=10A, di/dT=100A/\mu S$	-	-	217	nS
Reverse recovery charge	Q_{rr}		-	2.45	-	μC

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, junction to Case	$R_{th(j-C)}$	0.93	$^{\circ}C/W$
Thermal Resistance, junction to Ambient	$R_{th(j-A)}$	62.5	$^{\circ}C/W$

Notes:

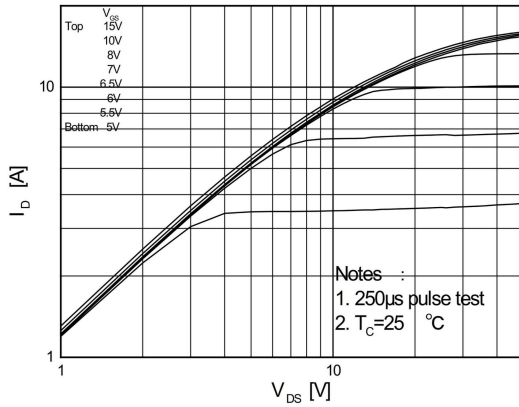
1. Pulse width limited by maximum junction temperature
2. $L=7.9mH$, $I_{AS}=10A$, $V_{DD}=50V$, $R_G=25\ \Omega$, Starting $T_J=25^{\circ}C$
3. $ISD \leq 10A$, $di/dt \leq 300A/\mu s$, $V_{DD} \leq B_{VDSS}$, Starting $T_J=25^{\circ}C$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
5. Essentially independent of operating temperature

Order information

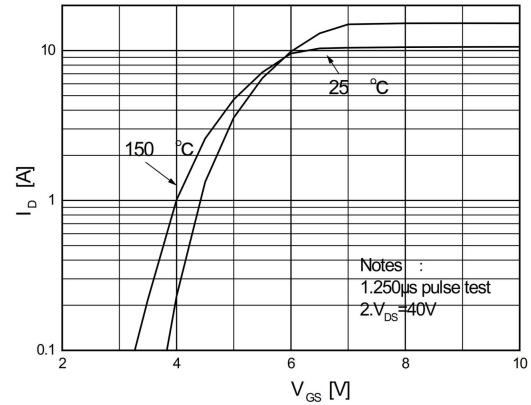
Order codes	Package	Packaging
MS10N40HGT0	TO-220	Tube
MS10N40HGT1	TO-220F	Tube

Electrical Characteristics

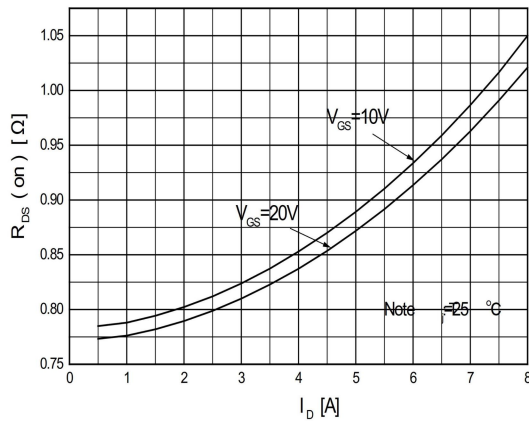
On-Region Characteristics



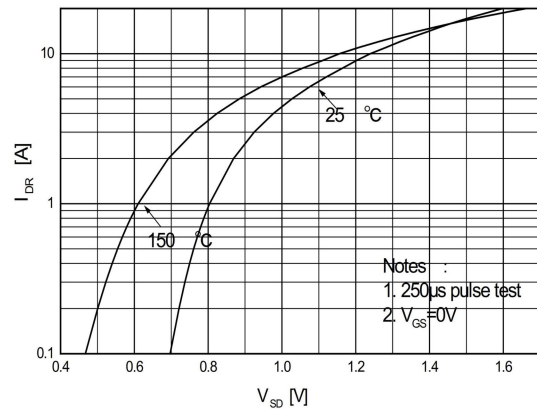
Transfer Characteristics



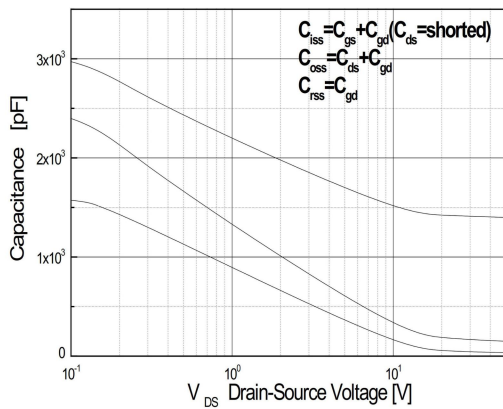
On-Resistance Variation vs. Drain Current and Gate Voltage



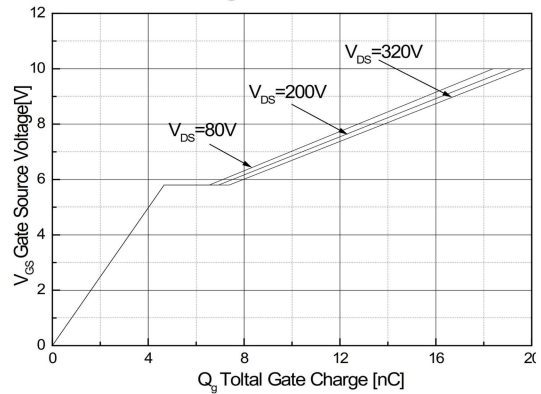
Body Diode Forward Voltage Variation vs. Source Current and Temperature



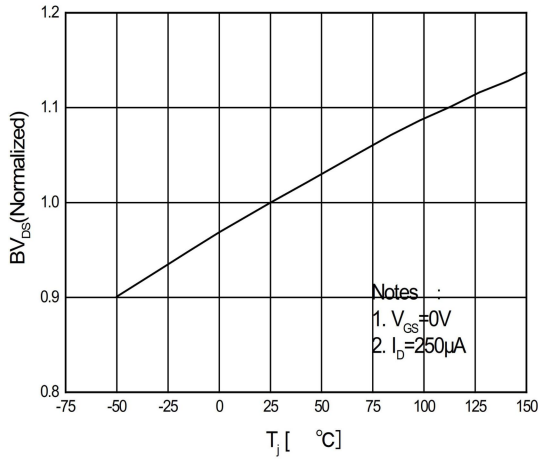
Capacitance Characteristics



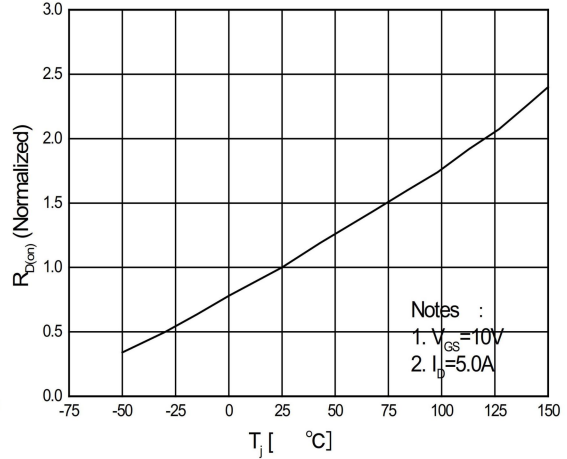
Gate Charge Characteristics



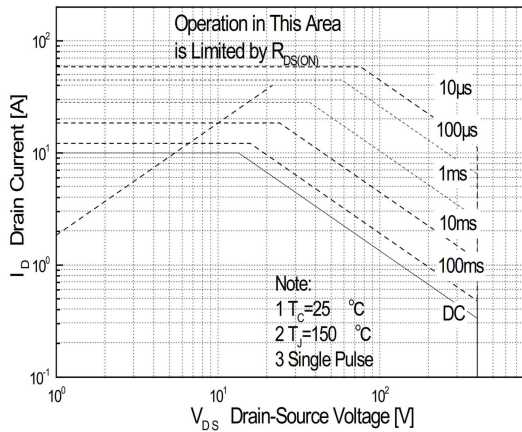
Breakdown Voltage Variation vs. Temperature



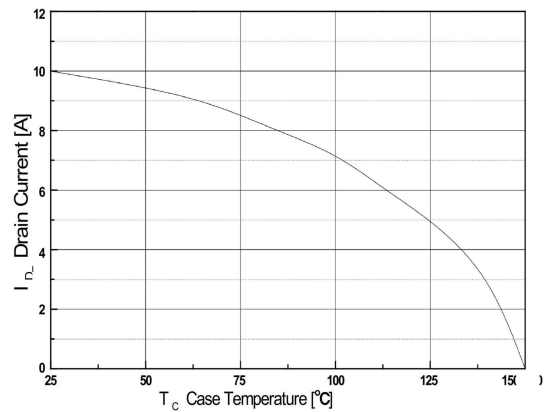
On-Resistance Variation vs. Temperature



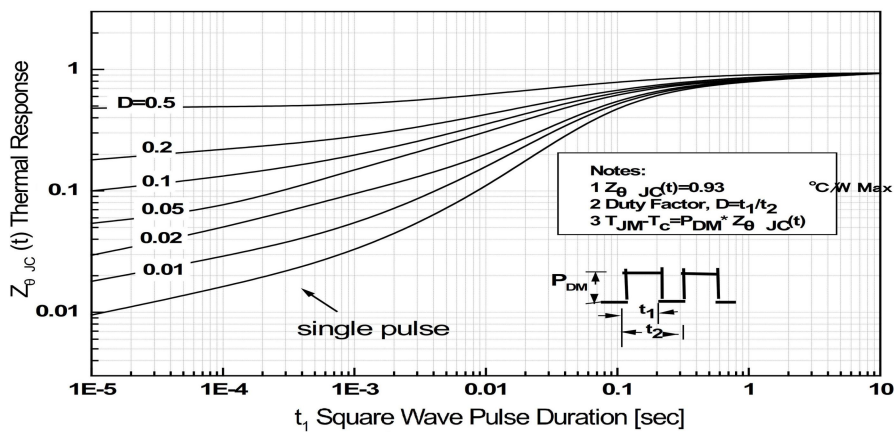
Maximum Safe Operating Area



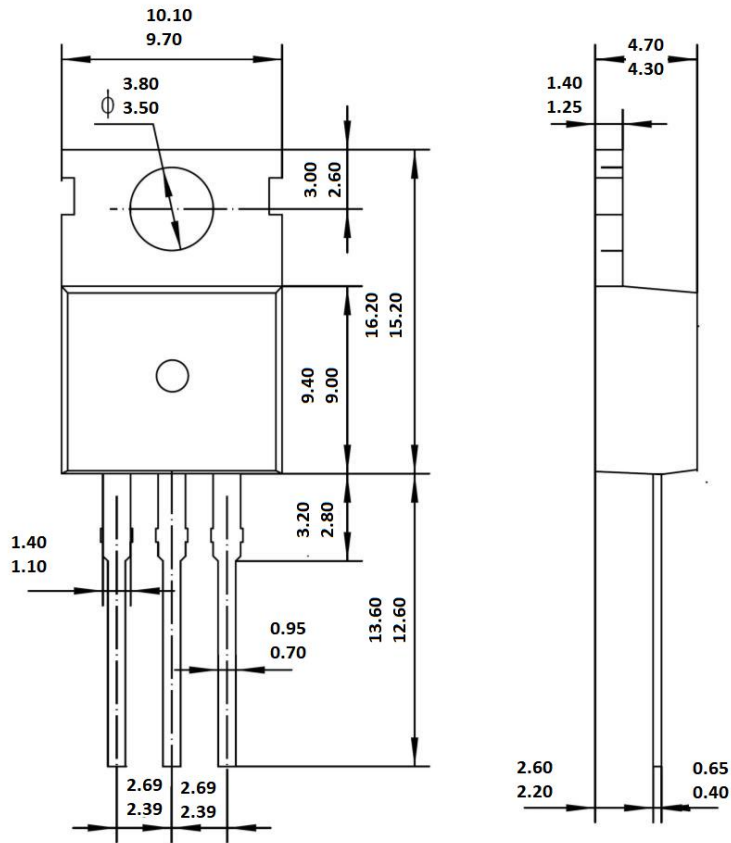
Maximum Drain Current vs. Case Temperature



Transient Thermal Response Curve



Package Mechanical DATA



TO-220

Unit: mm

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