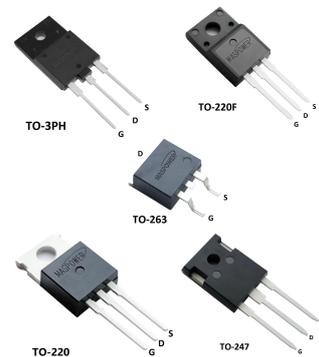
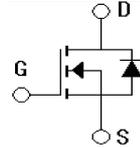


Features

- VDS=1500V, ID=4A
RDS(on)<8Ω @ VGS=10V
- 100% avalanche tested
- Intrinsic capacitances and Qg minimized
- High speed switching



Applications

- Switching applications

Absolute Ratings (Tc=25°C)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DSS}	1500	V
Gate-Source Voltage	V _{GSS}	±30	V
Drain Current-continuous	I _D	4	A
Drain Current-pulse*	I _{DM}	10	A
Single Pulsed Avalanche Energy	E _{AS}	460	mJ
Maximum Power Dissipation (TO-3PH)	PD	96	W
Maximum Power Dissipation (TO-220F)	PD	63	W
Maximum Power Dissipation (TO-263)	PD	80	W
Maximum Power Dissipation (TO-247)	PD	140	W
Maximum Power Dissipation (TO-220)	PD	100	W
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 =250μA, V _{GS} =0V	1500	-	-	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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	6.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=2A$	-	6.3	8	Ω
Forward Transconductance	g_{fs}	$V_{DS}=30V, I_D=3A$	-	5.8	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	824	-	pF
Output capacitance	C_{oss}		-	127	-	pF
Reverse transfer capacitance	C_{rss}		-	29	-	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	$t_{d(on)}$	$V_{DS}=750V,$ $I_D=3A,$ $V_{GS}=10V$ $R_G=25\Omega$	-	31	-	ns
Turn-On rise time	t_r		-	56	-	ns
Turn-Off delay time	$t_{d(off)}$		-	105	-	ns
Turn-Off rise time	t_f		-	115	-	ns
Total Gate Charge	Q_g	$V_{DS}=750V, I_D=3A,$ $V_{GS}=10V$ $R_G=25\Omega$	-	37	-	nC
Gate-Source charge	Q_{gs}		-	6	-	nC
Gate-Drain charge	Q_{gd}		-	22	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current	V_{SD}	$V_{GS}=0V, I_S=4A$	-	-	1.6	V
Diode Forward Current	I_S	$TC=25^{\circ}C$	-	-	4	A
Reverse recovery time	T_{rr}	$I_S=3A,$ $di/dT=100A/\mu S$	-	376	-	nS
Reverse recovery charge	Q_{rr}		-	2.1	-	μC

Thermal Characteristic

Parameter	Symbol	TO-247	TO-263	TO-3PH TO-220F	TO-220	Unit

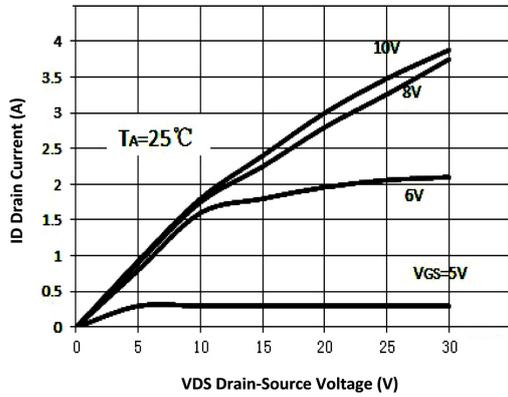
Thermal Resistance, junction to Case	$R_{th(j-C)}$	0.9	0.63	2.6	1.25	°C/W
Thermal Resistance, junction to Ambient	$R_{th(j-A)}$	50	35	58	62.5	°C/W

Order Message

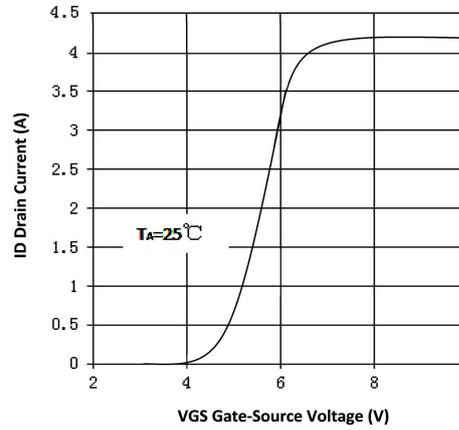
Marking	Package
MS4N1350	TO-3PH
MS4N1350S	TO-220F
MS4N1350E	TO-263
MS4N1350W	TO-247
MS4N1350T	TO-220

Electrical Characteristics

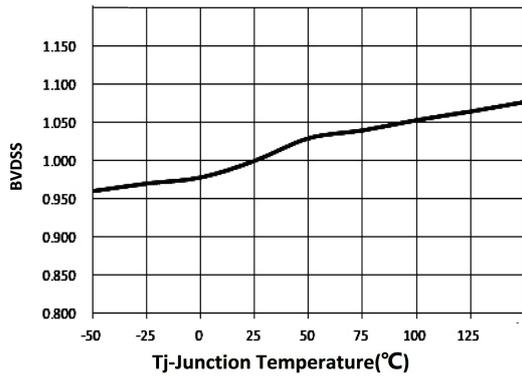
Out Characteristics



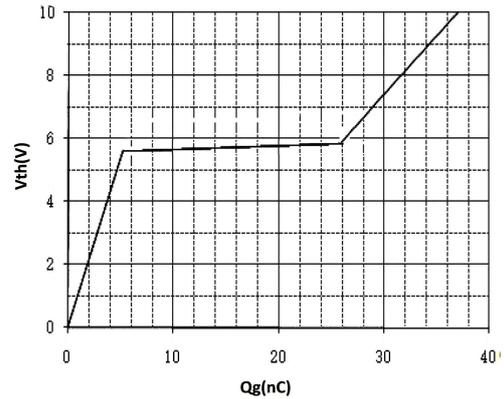
Transfer Characteristics



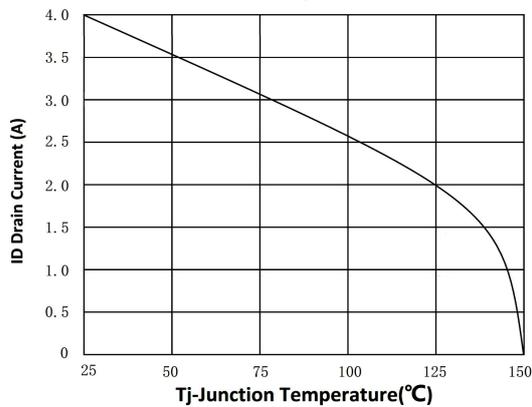
Normalized BV_{DSS} vs. Temperature



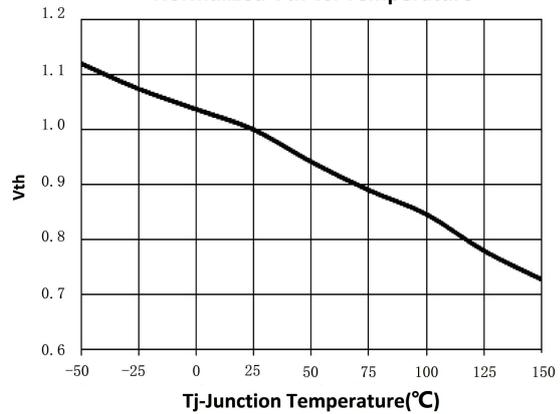
Gate Charge vs. V_{GS}



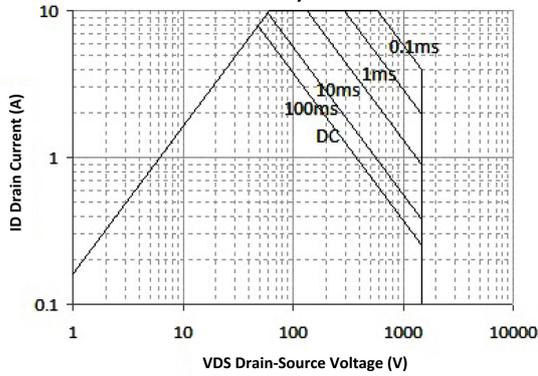
Maximum Drain Current vs. Case Temperature



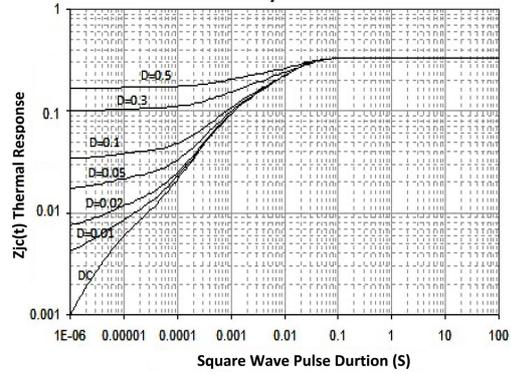
Normalized Vth vs. Temperature



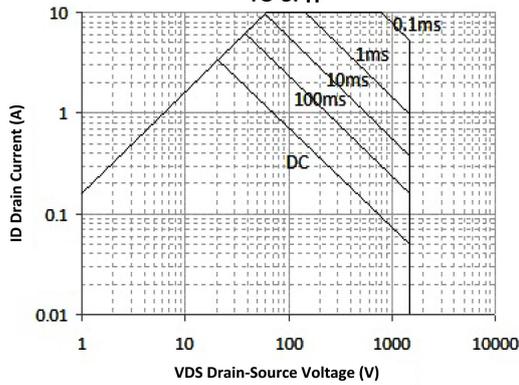
Maximum Safe Operating Area for To-263/TO-247



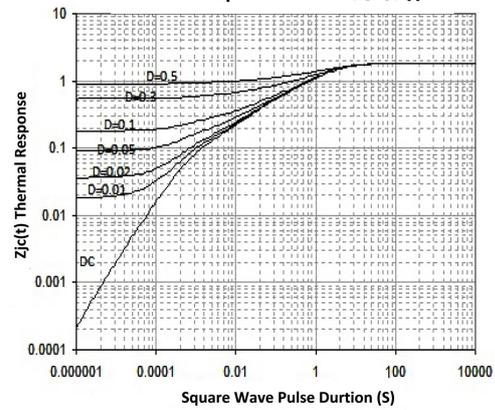
Thermal Impedance for To-263/TO-247



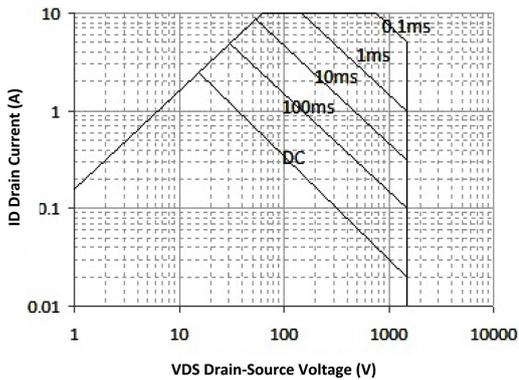
Maximum Safe Operating Area for TO-3PH



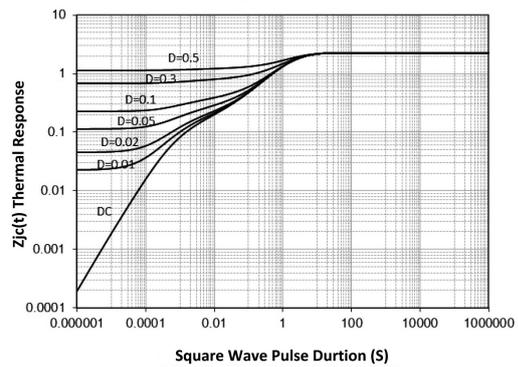
Thermal Impedance for TO-3PH

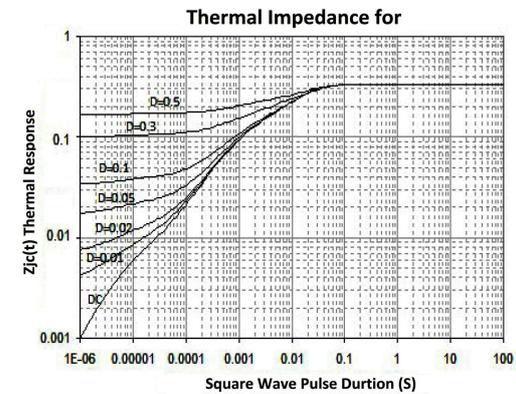
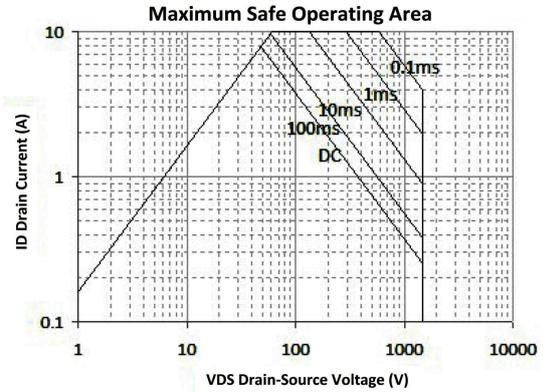
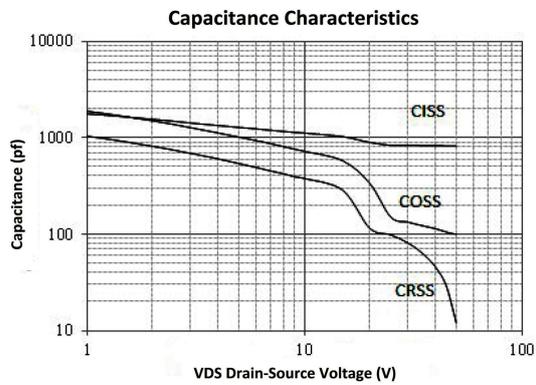
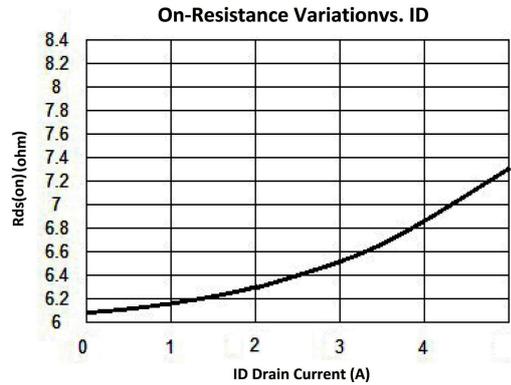
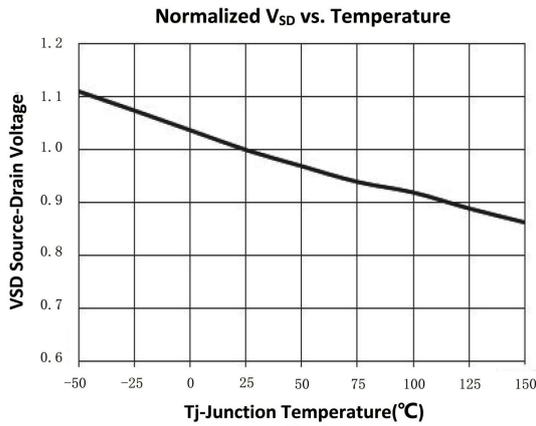


Maximum Safe Operating Area for TO-220F



Thermal Impedance for TO-220F





Package Mechanical DATA

