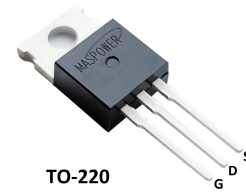


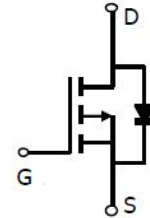
Features

- $V_{DS}=-100V, I_D=-120A$
 $R_{DS(on)(typ.)}=26m\Omega@-5A$
- Low gate charge
- Improved dv/dt capability



Applications

- High Efficiency Synchronous Rectification in SMPS
- Uninterruptible Power Supply
- High Speed Power Switching
- Hard Switched and High Frequency Circuits



Absolute Ratings ($T_C=25^\circ C$)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	-100	V
Transient Gate-Source Voltage	V_{GSM}	± 30	V
Continuous Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current-continuous	I_D	$T_C=25^\circ C$	-120
		$T_C=100^\circ C$	-80
Drain Current-pulse(note1)	I_{DM}	-480	A
Repetitive Avalanche Current (note1)	I_{AR}	-35	A
Single Pulsed Avalanche Energy (note2)	E_{AS}	1225	mJ
Peak Diode Recovery dv/dt(note3)	dv/dt	10	V/ns
Maximum Power Dissipation	P_D	$T_C=25^\circ C$	297
		$T_C=100^\circ C$	119
Operating and Storage Temperature Range	T_J, T_{STG}	-55~+150	°C
Maximum lead temperature for soldering	T_L	300	
Weight	G(TO-220)	2.0	g

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	$I_D=-250\mu A, V_{GS}=0V$	-100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0V$	-	-	-20	μA

Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-	-2.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-12V, I_D=-5A$ (note4)	-	26	34	m Ω
Forward Trans conductance	g_{fs}	$V_{GS}=-10V, I_D=-60A$ (note4)	-	110	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=-25V,$ $V_{GS}=0V,$ $f=1.0MHz$ (note5)	-	13.2	-	nF
Output capacitance	C_{oss}		-	880	-	pF
Reverse transfer capacitance	C_{rss}		-	260	-	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	$t_{d(on)}$	$V_{DS}=-50V,$ $I_D=-60A,$ $V_{GS}=-10V$ $R_G=1A\Omega(External)$	-	24	-	ns
Turn-On rise time	t_r		-	42	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	51	-	ns
Turn-Off rise time	t_f		-	19	-	ns
Total Gate Charge	Q_g	$V_{DS}=-50V,$ $I_D=-60A,$ $V_{GS}=-10V (note5)$	-	185	-	nC
Gate-Source charge	Q_{gs}		-	60	-	nC
Gate-Drain charge	Q_{gd}		-	68	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1A$ (note4)	-	0.7	-1.2	V
Diode Forward Current	I_S	$T_C=25^{\circ}C$	-	-	-120	A
Reverse recovery time	T_{rr}	$I_S=-40A,$ $-di/dt=-100A/\mu s,$ $V_R=-50V, V_{GE}=0V$	-	65	-	ns
Reverse recovery charge	Q_{rr}		-	200	-	nC
Reverse recovery current	I_{rr}		-	-8	-	A

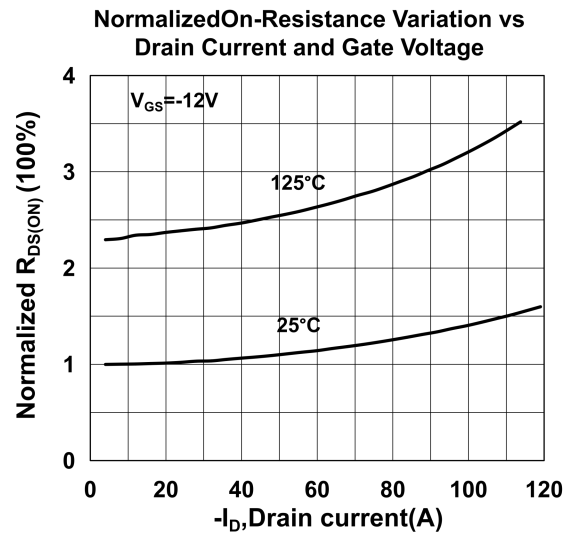
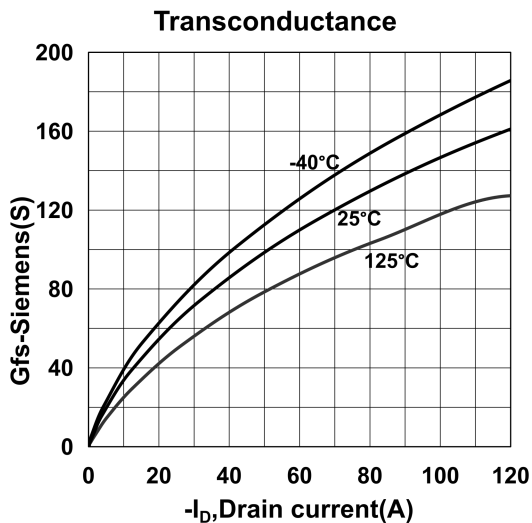
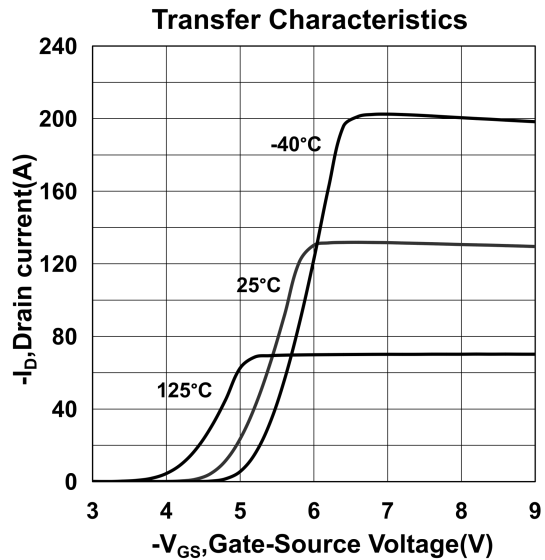
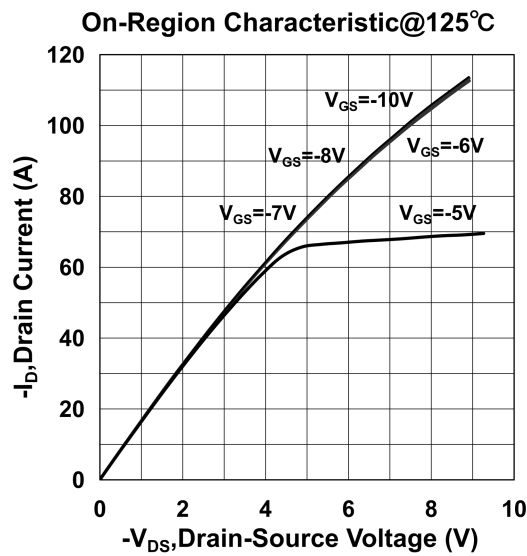
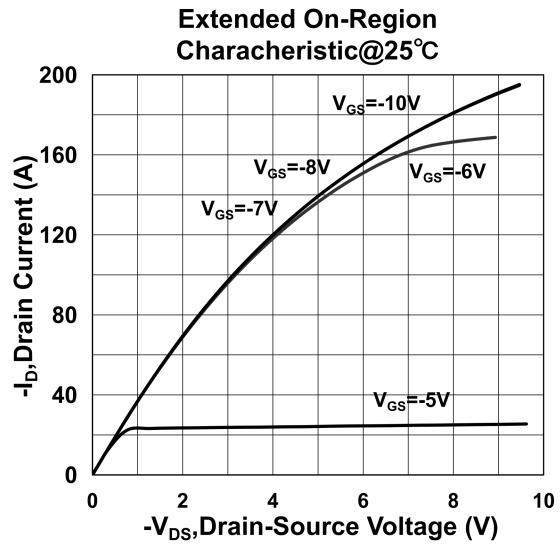
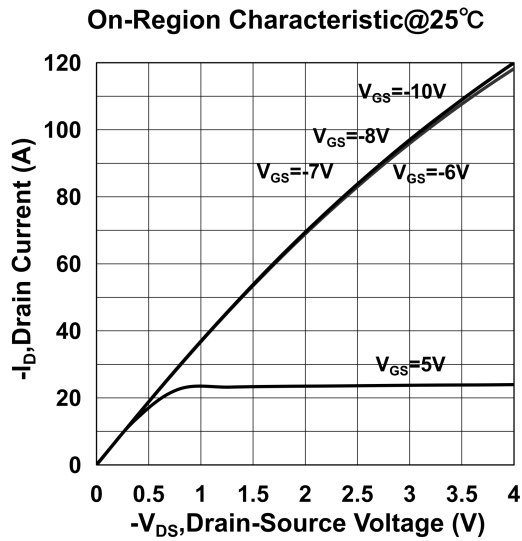
Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, junction to Case, Max	$R_{th(J-C)}$	0.42	$^{\circ}C/W$
Thermal Resistance, junction to Ambient	$R_{th(J-A)}$	40	$^{\circ}C/W$

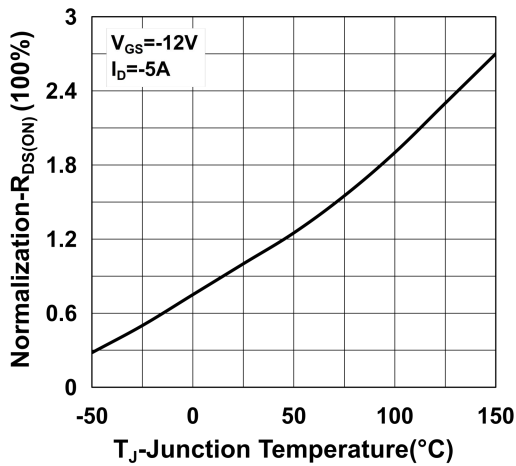
Notes:

1. Pulse width limited by maximum junction temperature
2. $L=1mH, I_{AS}=I_{AR}, V_{DD}=-50V, R_G=25\Omega, Starting T_J=25^{\circ}C$
3. $I_S=I_{DM}, V_{DD}\leq V_{DSS}, T_J\leq 150^{\circ}C$
4. Pulse Test: Pulse Width $\leq 300\mu s, Duty Cycle\leq 2\%$
5. Essentially independent of operating temperature

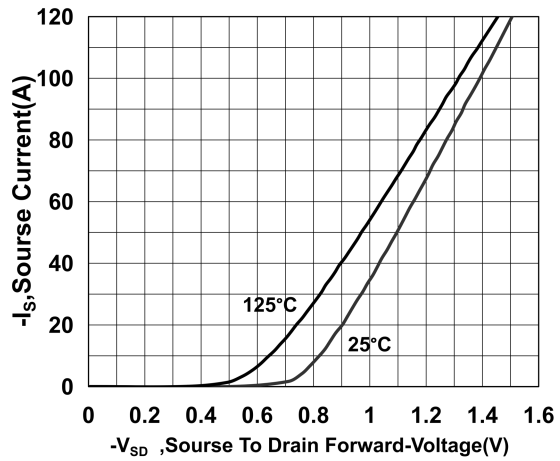
Electrical Characteristics



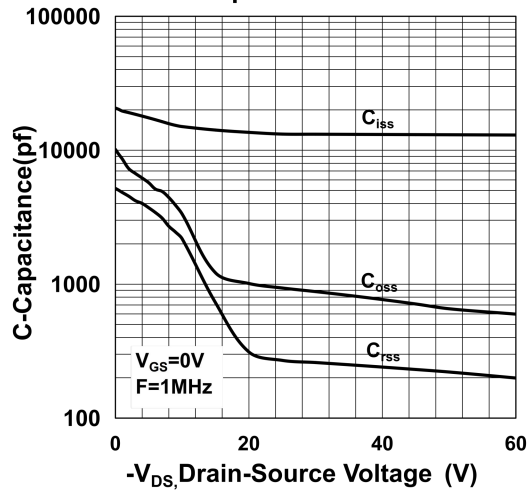
Normalization On-Resistance Variation vs Junction Temperature



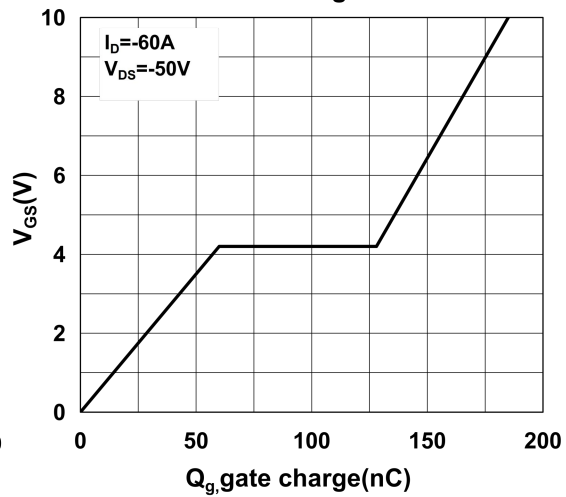
Body Diode Forward Voltage Variation with Source Current and Temperature



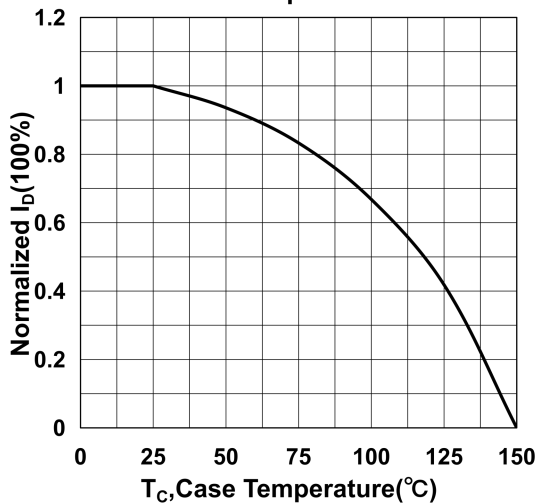
Capacitance



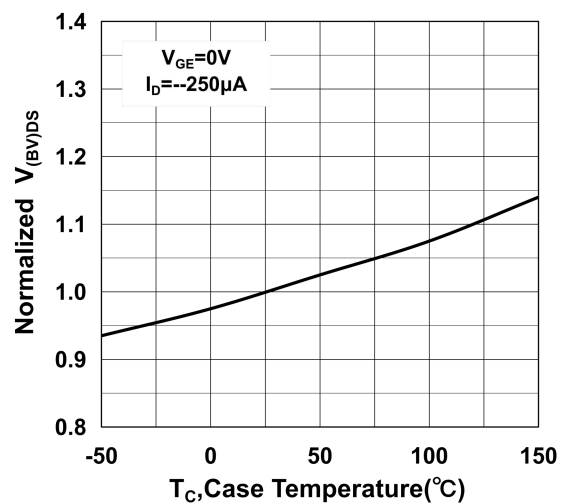
Gate Charge



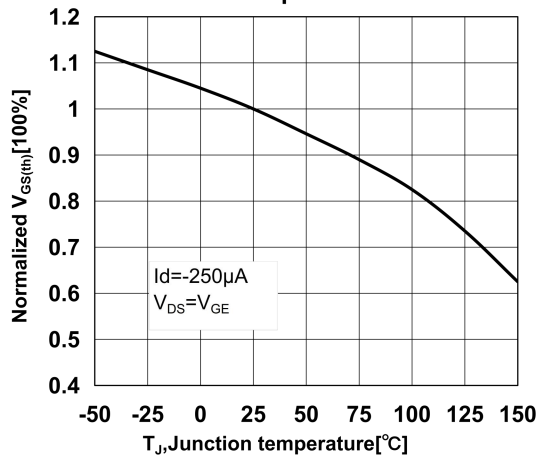
Maximum Drain Current vs Case Temperature



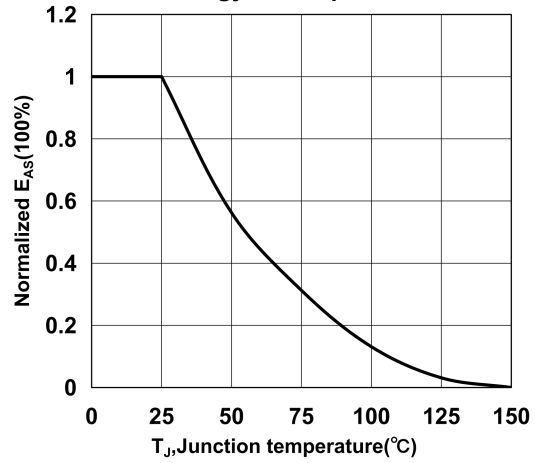
Normalized $V_{(BV)DS}$ vs temperature



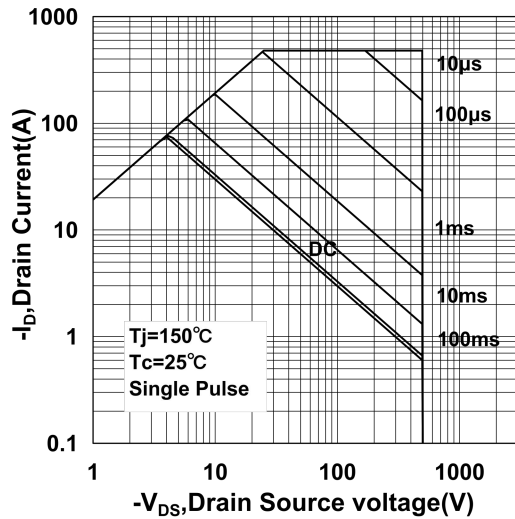
Normalized gate threshold voltage vs temperature



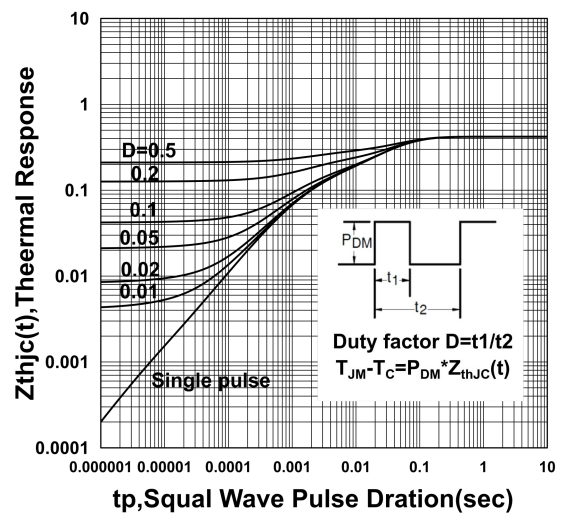
Normalized maximum avalanche energy vs temperature



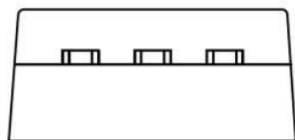
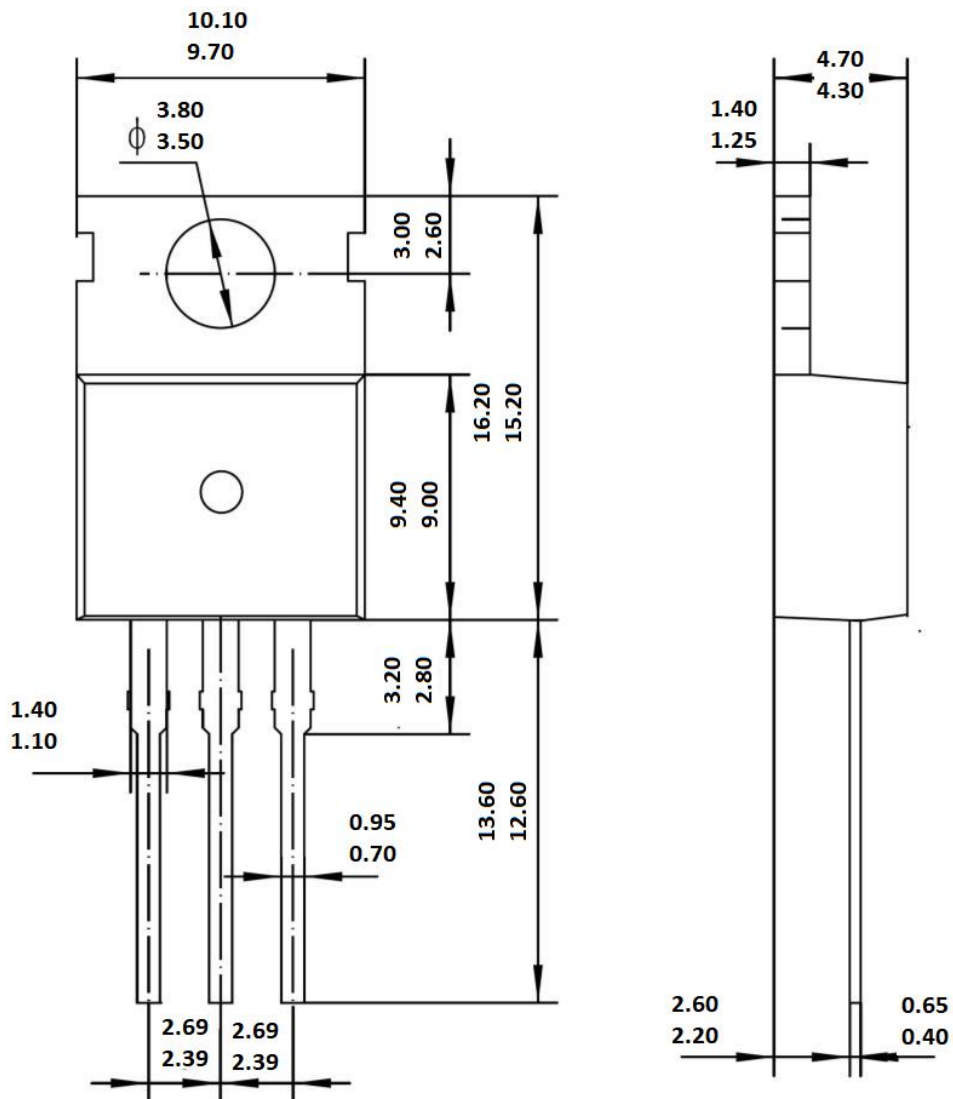
Safe Operating Area



Transient response Curve



Package Mechanical DATA



TO-220

Unit: mm