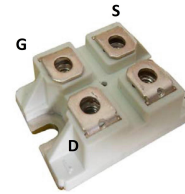


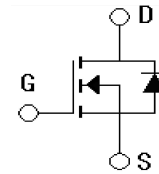
Features

- N-Channel, Low $R_{DS(on)}$
- High Current Handling Capability
- Fast Intrinsic Diode
- Avalanche Rated



Applications

- DC-DC Converter
- UPS
- AC Motor Drives
- Battery Chargers
- Switched-Mode and Resonant-Mode Power Supplies



Absolute Ratings ($T_c=25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	250	V
Drain Current -continuous	I_D	170	A
Drain Current - pulse*	I_{DM}	500	A
Gate-Source Voltage	V_{GSS}	± 20	V
Single Pulsed Avalanche Energy	E_{AS}	5	J
Power Dissipation	PD	860	W
Operating and Storage Temperature Range	T_j, T_{STG}	$-55 \sim +150$	$^\circ\text{C}$
Maximum Lead Temperature for Soldering Purposes	T_L	300	$^\circ\text{C}$

*Drain current limited by maximum junction temperature

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

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	$I_D=3\text{mA}, V_{GS}=0\text{V}$	250	-	-	V
Drain cut-off current	I_{DSS}	$V_{DS}=40\text{V}, V_{GS}=0\text{V}$ $T_j=25^\circ\text{C}$	-	-	50	μA
Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0\text{V}, V_{GS}=20\text{V}$	-	-	200	nA
Gate-body leakage current, reverse	I_{GSSR}	$V_{DS}=0\text{V}, V_{GS}=-20\text{V}$	-	-	-200	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	-	5.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=35A$	-	19.5	-	m Ω
Forward transconductance	Gfs	$V_{DS}=20V, I_D=60A$	-	140	-	S
Dynamic Characteristics						
Input capacitance	Ciss	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1MHz$	-	23	-	nF
Output capacitance	Coss		-	2000	-	pF
Reverse transfer capacitance	Crss		-	45	-	pF
Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{DD}=125V, I_D=90A$ $R_g=1\Omega$	-	33	-	ns
Turn-On rise time	t_r		-	50	-	ns
Turn-Off delay time	$T_{d(off)}$		-	93	-	ns
Turn-Off Fall time	t_f		-	22	-	ns
Total Gate Charge	Qg	$V_{DS}=125V,$ $I_D=90A,$ $V_{GS}=10V$	-	360	-	nC
Gate-Source charge	Qgs		-	135	-	nC
Gate-Drain charge	Qgd		-	63	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=100A,$ (note1)	-	-	1.2	V
Maximum Continuous Drain-Source Diode Forward Current		I_S	-	170	-	A
Reverse recovery time	t_{rr}	$I_F=90A$ $dI_F/dt=100A/\mu s$ $V_R=75V$	-	200	-	ns
Reverse recovery charge	Qrr		-	750	-	nC

Thermal Characteristic

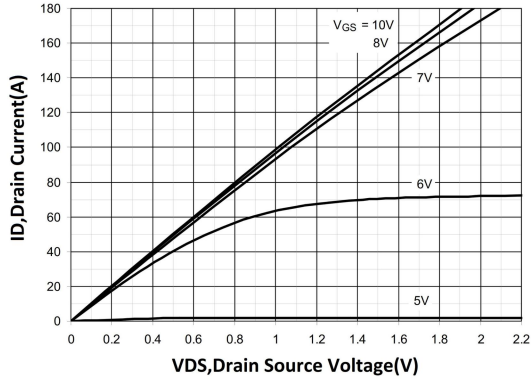
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.145	$^{\circ}C/W$

Notes:

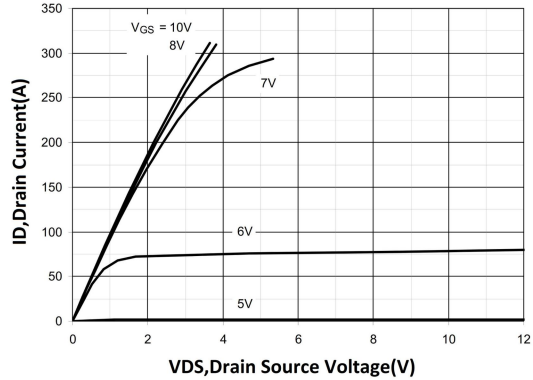
1. Pulse test, $t \leq 300\mu s$, duty cycle, $d \leq 2\%$.

Typical Electrical and Thermal Characteristics (Curves)

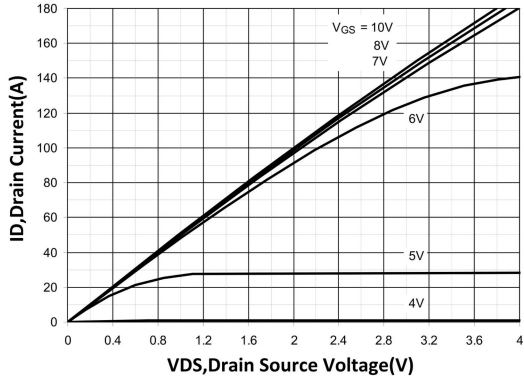
Output Characteristics@T_j=25°C



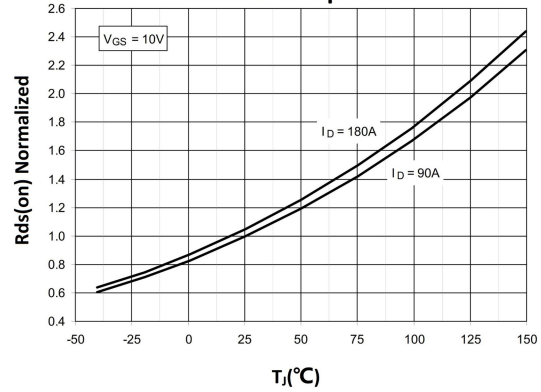
Extended Output Characteristics@T_j=25°C



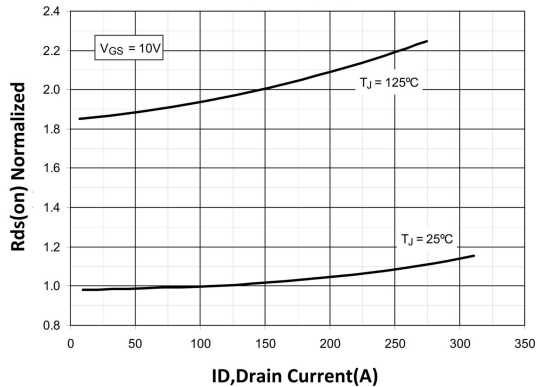
Output Characteristics@T_j=125°C



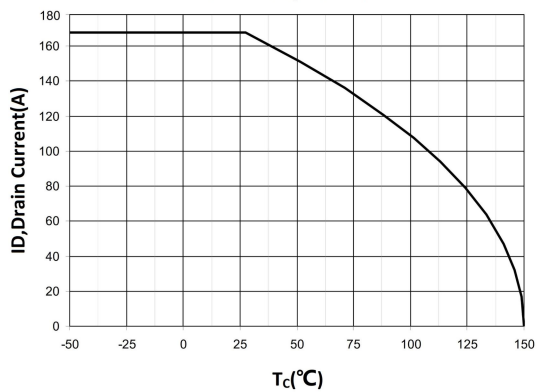
R_{ds(on)} Normalized vs. Junction Temperature



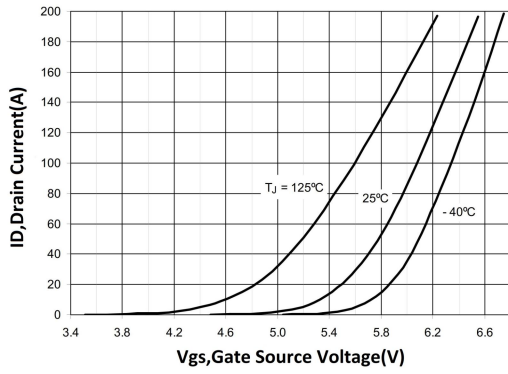
R_{ds(on)} Normalized vs. Drain Current



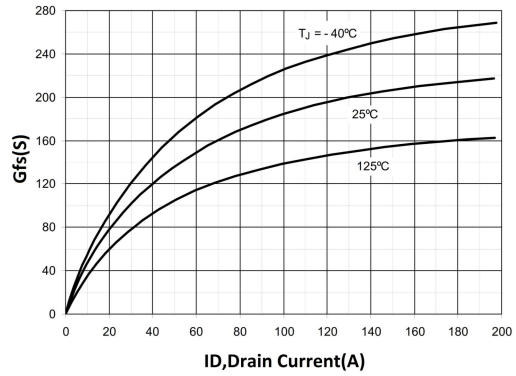
Maximum Drain Current vs. Case Temperature



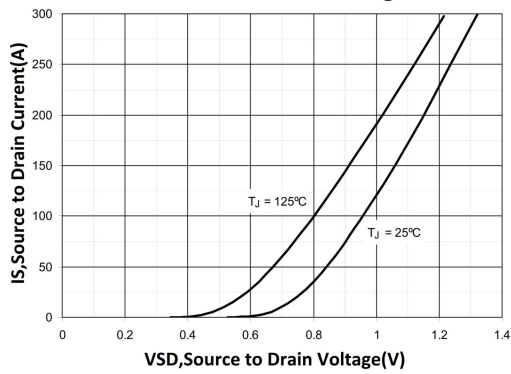
Input Admittance



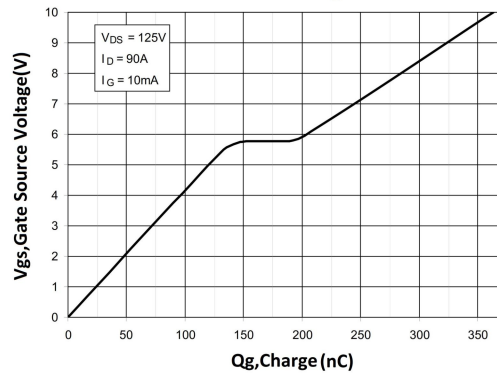
Transconductance



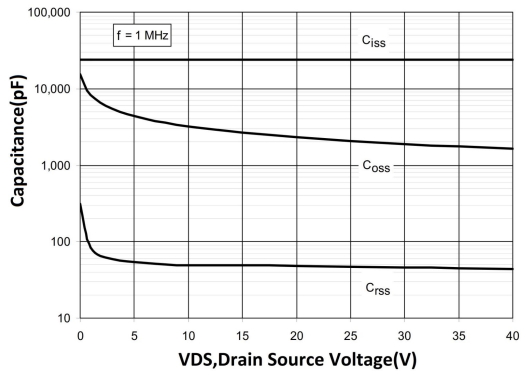
Diode Forward Voltage



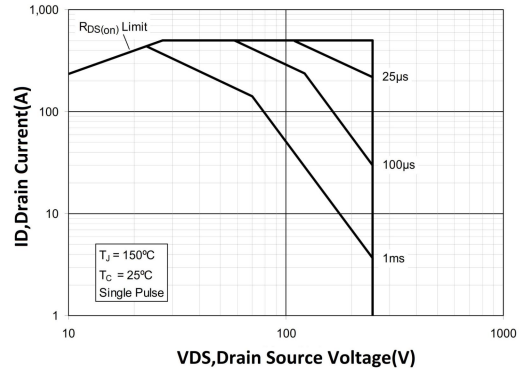
Gate Charge



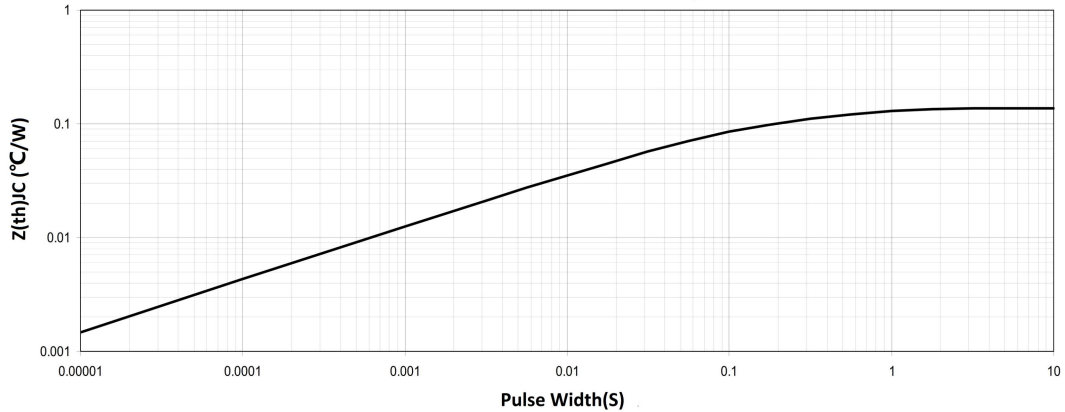
Capacitance



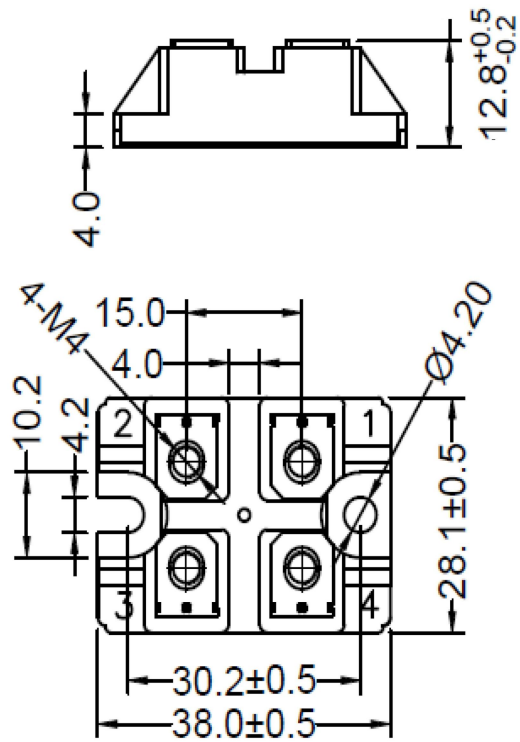
SOA



Maximum Transient Thermal Impedance



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