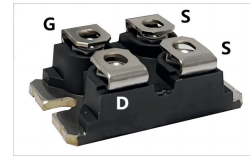


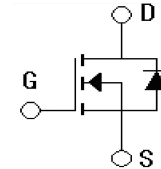
Features

- 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_{DS}	150	V
Drain Current -continuous	I_D	170	A
Drain Current - pulse*	I_{DM}	500	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy	E_{AS}	5	J
Power Dissipation	PD	925	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}	$I_D=3\text{mA}, V_{GS}=0\text{V}$	150	-	-	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 =250uA	2.0	-	4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V,I _D =35A	-	3.5	-	mΩ
Forward transconductance	Gfs	V _{DS} =20V,I _D =60A	-	140	-	S
Dynamic Characteristics						
Input capacitance	Ciss	VDS=25V, VGS=0V, f=1MHz	-	23	-	nF
Output capacitance	Coss		-	2000	-	pF
Reverse transfer capacitance	Crss		-	45	-	pF
Switching Characteristics						
Turn-On delay time	td(on)	V _{DD} =125V,I _D =90A Rg=1Ω	-	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}	VGS=0V,IS=100A, (note1)	-	-	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I _S		-	170	-	A
Reverse recovery time	trr	IF=90A dIF/dt=100A/us VR=75V	-	200	-	ns
Reverse recovery charge	Qrr		-	750	-	nC

Thermal Characteristic

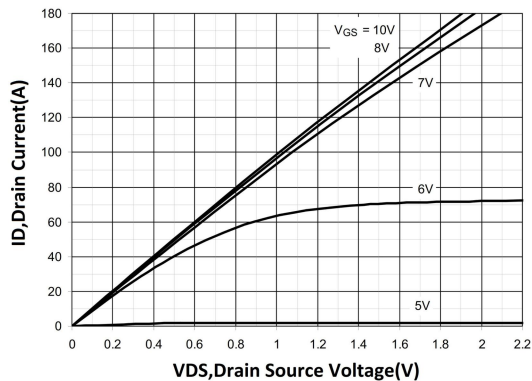
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.145	$^{\circ}C/W$

Notes:

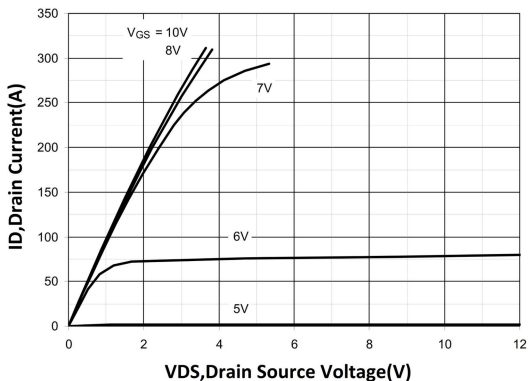
1. Pulse test, $t \leq 300\mu s$, duty cycle, $d \leq 2\%$.

Typical Electrical and Thermal Characteristics (Curves)

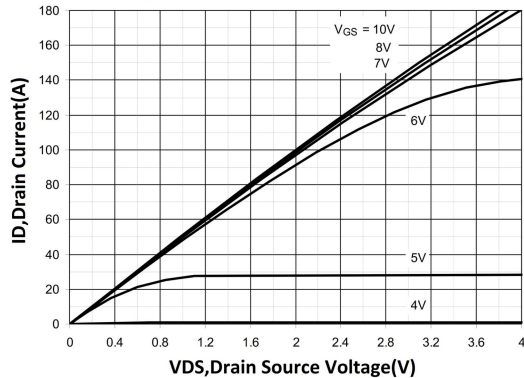
Output Characteristics@T_j=25°C



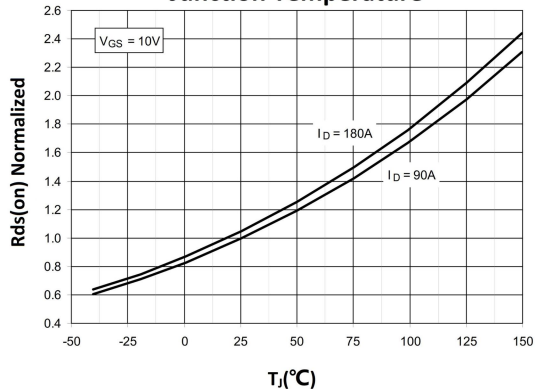
Extended Output Characteristics@T_j=25°C



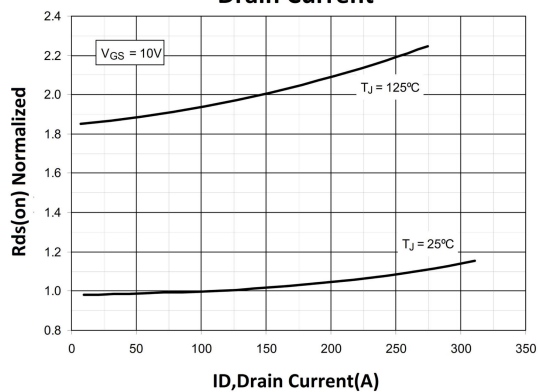
Output Characteristics@T_j=125°C



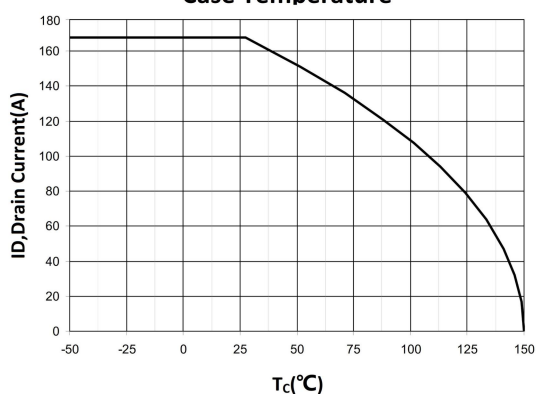
Rds(on) Normalized vs. Junction Temperature



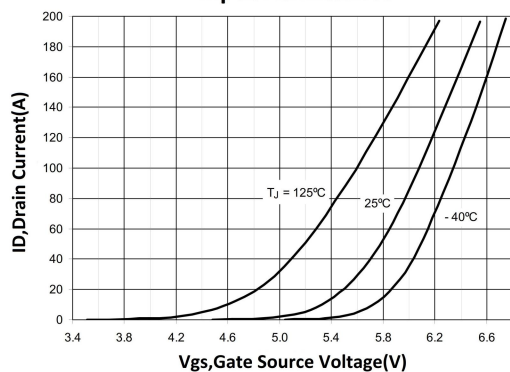
Rds(on) Normalized vs. Drain Current



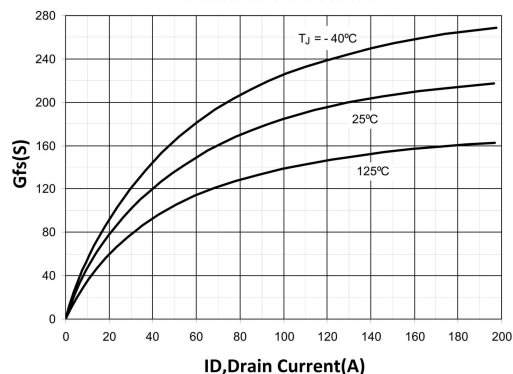
Maximum Drain Current vs. Case Temperature



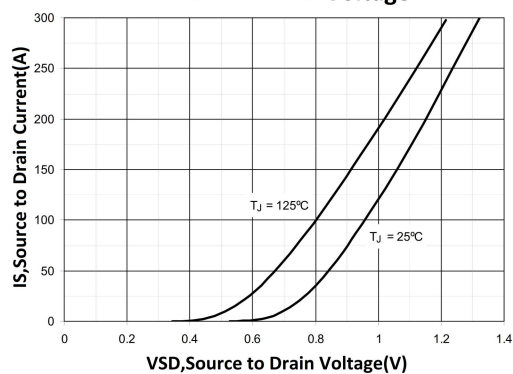
Input Admittance



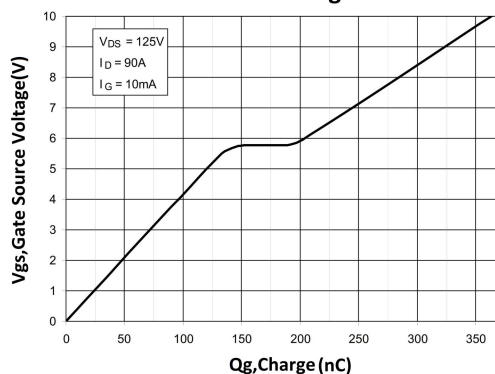
Transconductance



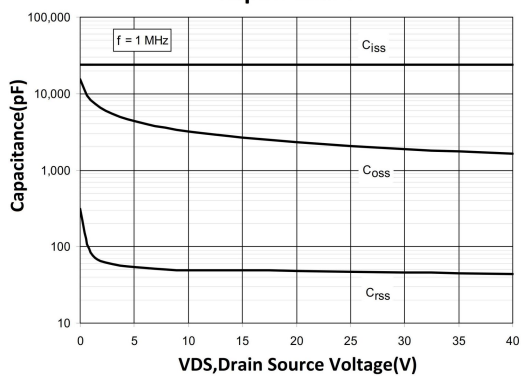
Diode Forward Voltage



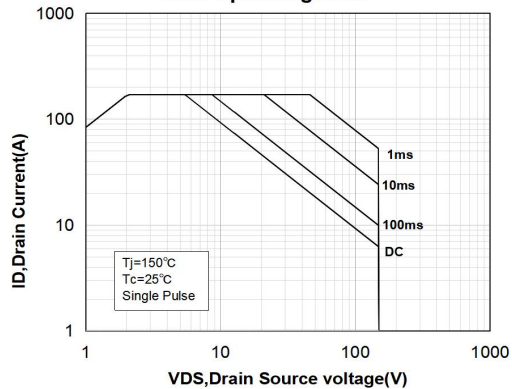
Gate Charge



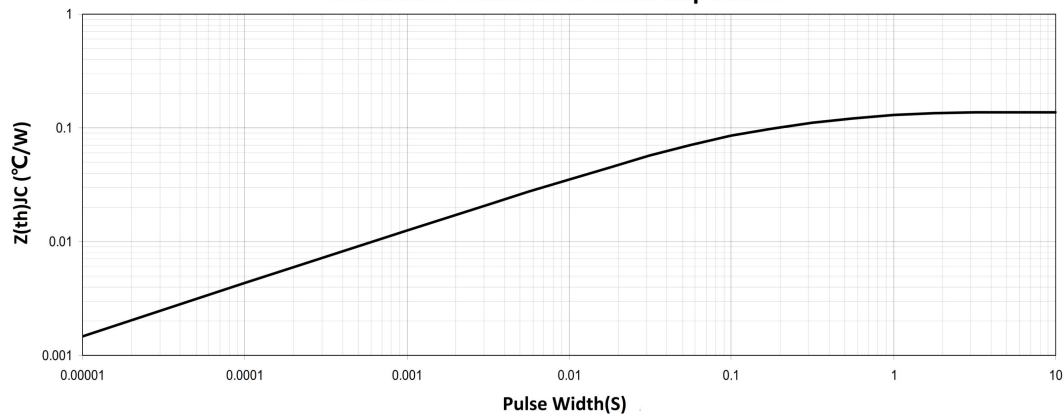
Capacitance



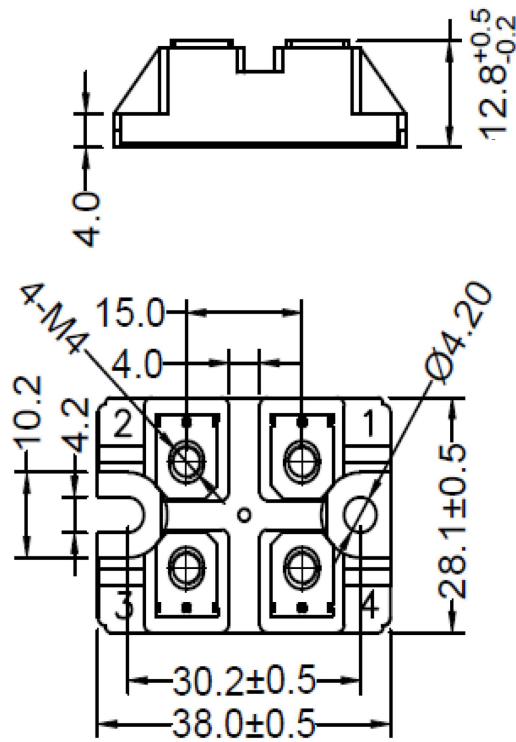
Safe Operating Area



Maximum Transient Thermal Impedance



Package Mechanical DATA



SOT227

Unit:mm