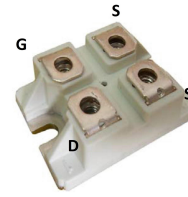


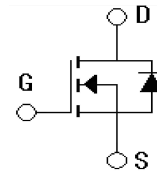
## Features

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



## Applications

- DC-DC Converters
- DC-AC Inverters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- DC Choppers
- Temperature and Lighting Controls



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	1000	V
Drain Current -continuous	$I_D$	50	A
Drain Current - pulse*	$I_{DM}$	110	A
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Single Pulsed Avalanche Energy	$E_{AS}$	4	J
Power Dissipation	PD	900	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
<b>Off-Characteristics</b>						
Drain-Source Voltage	$BV_{DSS}$	$I_D=3\text{mA}, V_{GS}=0\text{V}$	1000	-	-	V
Drain cut-off current	$I_{DSS}$	$V_{DS}=1200, V_{GS}=0\text{V}$	-	-	50	$\mu\text{A}$
Gate-body leakage current, forward	$I_{GSSF}$	$V_{DS}=0\text{V}, V_{GS}=30\text{V}$	-	-	200	nA
Gate-body leakage current, reverse	$I_{GSSR}$	$V_{DS}=0\text{V}, V_{GS}=-30\text{V}$	-	-	-200	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3.5	-	6.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=1A$ (note1)	-	210	-	m $\Omega$
Forward transconductance	Gfs	$V_{DS}=20V, I_D=25A$ (note1)	-	40	-	S
Dynamic Characteristics						
Input capacitance	Ciss	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1MHz$	-	13	-	nF
Output capacitance	Coss		-	1000	-	pF
Reverse transfer capacitance	Crss		-	85	-	pF
Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{DD}=500V, I_D=25A$ $R_g=0.5\Omega$	-	50	-	ns
Turn-On rise time	$t_r$		-	30	-	ns
Turn-Off delay time	$T_{d(off)}$		-	65	-	ns
Turn-Off Fall time	$t_f$		-	25	-	ns
Total Gate Charge	Qg	$V_{DD}=500V, I_D=25A$ $V_{GS}=10V$	-	260	-	nC
Gate-Source charge	Qgs		-	75	-	nC
Gate-Drain charge	Qgd		-	113	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=35A,$ (note1)	-	-	1.2	V
Maximum Continuous Drain-Source Diode Forward Current		$I_S$	-	50	-	A
Reverse recovery time	$t_{rr}$	$I_F=20A$ $dI_F/dt=-100A/\mu s$ $VR=100V$	-	300	-	ns
Reverse recovery charge	Qrr		-	2	-	$\mu C$

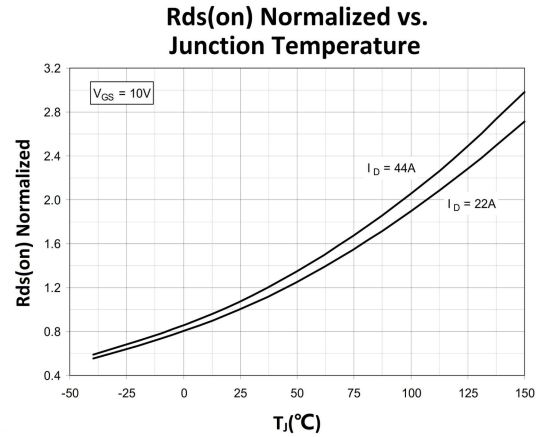
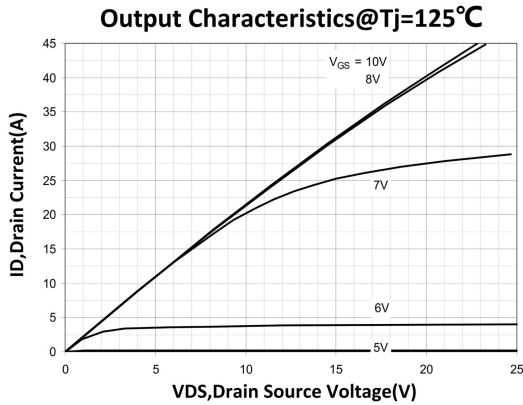
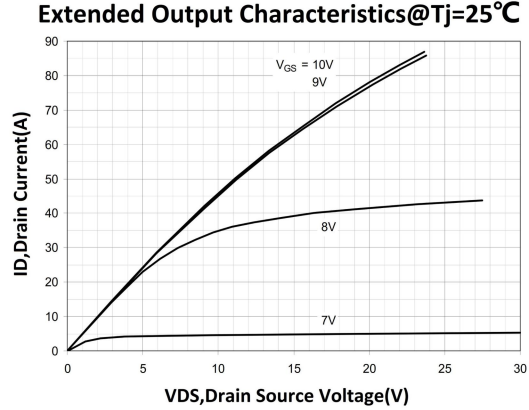
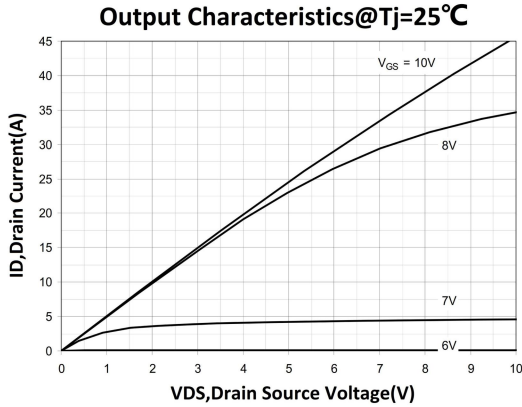
### Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.138	$^{\circ}C/W$

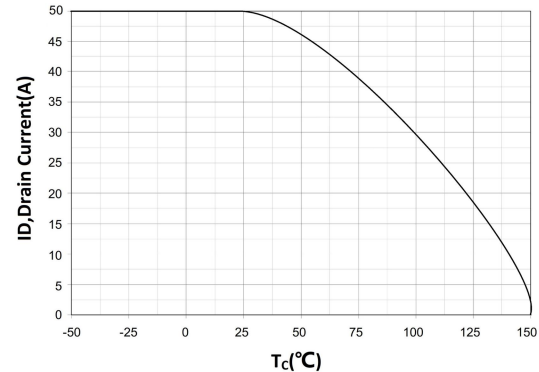
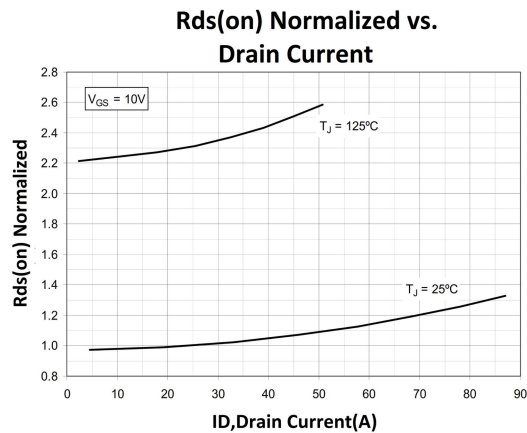
Notes:

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

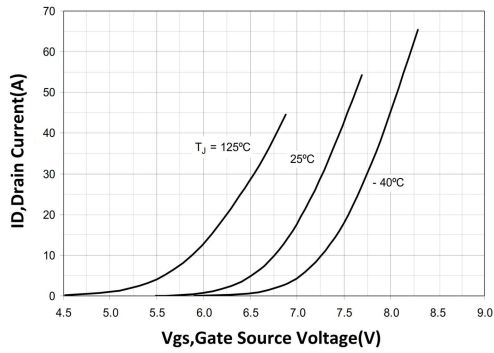
## Typical Electrical and Thermal Characteristics (Curves)



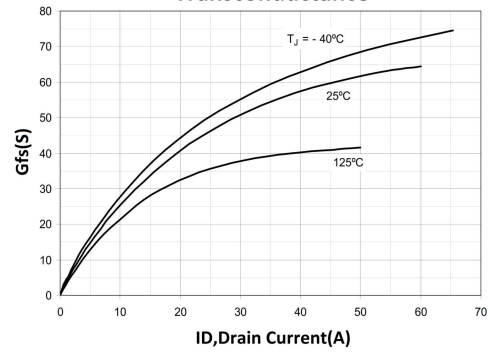
**Maximum Drain Current vs. Case Temperature**



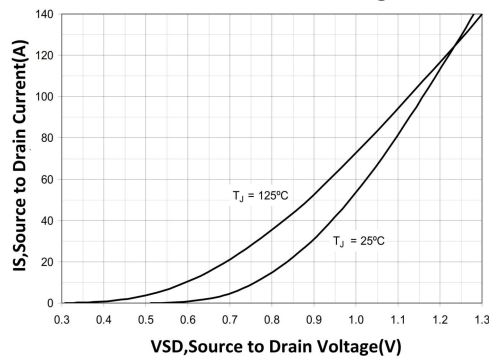
**Input Admittance**



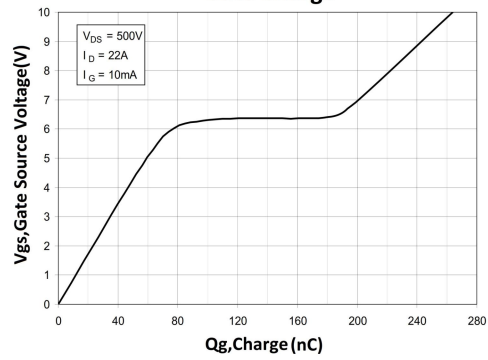
**Transconductance**



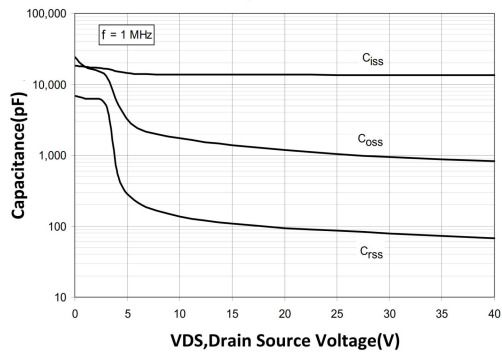
**Diode Forward Voltage**



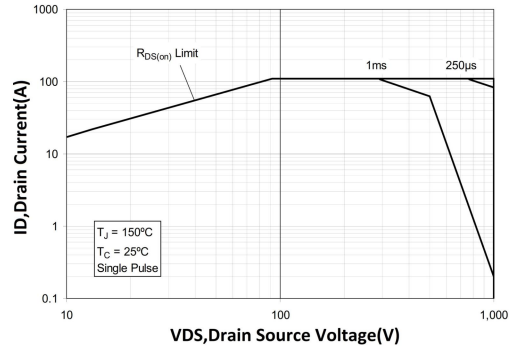
**Gate Charge**



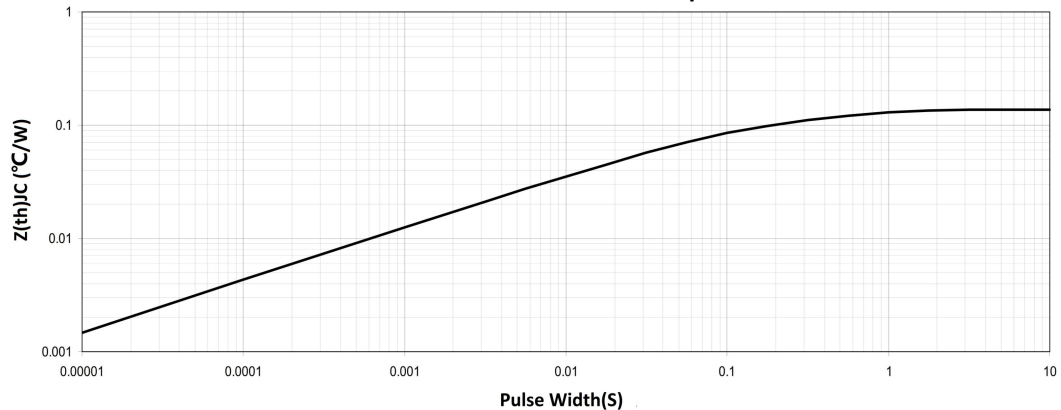
**Capacitance**



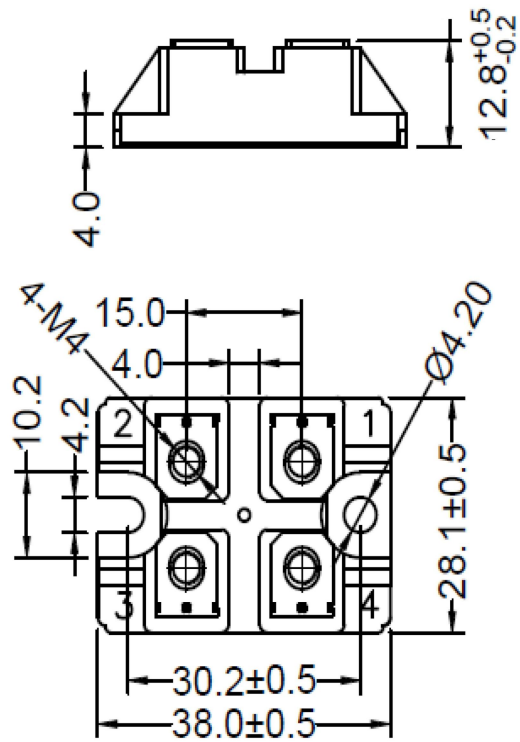
**Fig. 12. Forward-Bias Safe Operating Area**



**Maximum Transient Thermal Impedance**



## Package Mechanical DATA



SOT227 Unit:mm

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