

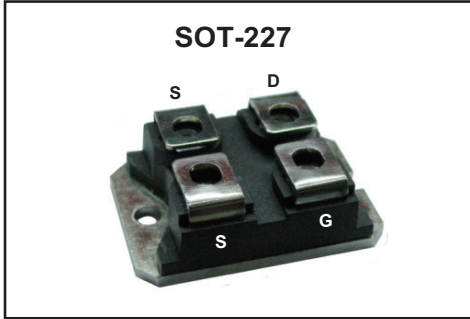
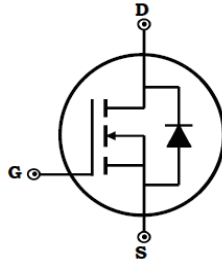


**N-Channel Enhancement Mode Power MOSFET 900V / 38A**

**Features**

- ◆  $V_{DSS} = 900V$
- ◆  $R_{DS(ON)} < 210m\Omega @ V_{GS} = 10 V$
- ◆ Fully Avalanche Rated
- ◆ Pb Free & RoHS Compliant
- ◆ Isolation Type Package
- ◆ Electrically Isolation base plate

Preliminary



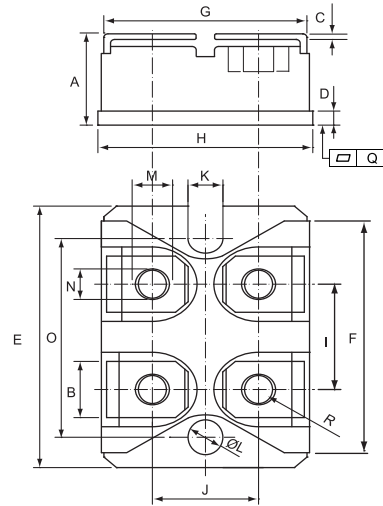
Dimensions in inches and (millimeters)

**Applications**

- ◆ Backlighting
- ◆ Power Converters
- ◆ Synchronous Rectifiers

**Absolute Maximum Ratings (Tc=25°C unless otherwise noted)**

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	900	V
Gate-Source Voltage	$V_{GS}$	±30	V
Drain Current-Continuous @ $T_c = 25^\circ C$ @ $T_c = 100^\circ C$	$I_D$	38 20	A
Drain Current-Pulsed @ $T_c = 25^\circ C$	$I_{DM}$	120	A
Maximum Power Dissipation	$P_D$	1000	W
Storage Temperature Range	$T_{STG}$	-50 to +150	°C
Operating Junction Temperature Range	$T_J$	-50 to +150	°C
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.125	°C/W
Isolation Voltage (A.C. 1 minute)	$V_{iso}$	2500	V
Mounting torque (M4 Screw) To heatsink To terminal	$M_d$	1.5 1.3	Nm



	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.460	0.483	11.68	12.28
B	0.307	0.323	7.80	8.20
C	0.030	0.033	0.75	0.85
D	0.071	0.081	1.80	2.05
E	1.488	1.504	37.80	38.20
F	1.248	1.260	31.70	32.00
G	0.917	0.957	23.30	24.30
H	0.996	1.008	25.30	25.60
I	0.579	0.602	14.70	15.30
J	0.492	0.516	12.50	13.10
K	0.161	0.169	4.10	4.30
L	0.161	0.169	4.10	4.30
M	0.181	0.197	4.60	5.00
N	0.165	0.181	4.20	4.60
O	1.181	1.197	30.00	30.40
Q	-0.002	0.004	-0.05	0.10
R	M4*8			



### Electrical Characteristics @ T<sub>J</sub> =25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OFF Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V , I <sub>DS</sub> =3mA	900	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>GS</sub> =0V , V <sub>DS</sub> =900V	-	-	50	uA
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±30V , V <sub>DS</sub> =0V	-	-	±300	nA
<b>ON Characteristics</b>						
Gate Threshold Voltage	V <sub>TH</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =8mA	3.5	-	4.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V , I <sub>DS</sub> =19A	-	-	210	mΩ
Gate Resistance	R <sub>G</sub>		-	10	-	Ω
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =3.9V , I <sub>D</sub> =2A	8	-	-	S
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V	-	2168	-	pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V	-	917	-	
Reverse Transfer Capacitance	C <sub>rss</sub>	Freq.=1MHz	-	690	-	
<b>Switching Characteristics</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =450V	-	76	-	ns
Rise Time	t <sub>r</sub>	V <sub>GS</sub> =10V	-	50	-	
Turn-Off Delay Time	t <sub>d(off)</sub>	I <sub>DS</sub> =19A	-	740	-	
Fall Time	t <sub>f</sub>	R <sub>G</sub> =10Ω	-	190	-	
Total Gate Charge at 10V	Q <sub>g</sub>	V <sub>DS</sub> =450V	-	145	-	nC
Gate to Source Charge	Q <sub>gs</sub>	V <sub>GS</sub> =10V I <sub>DS</sub> =19A	-	51	-	
Gate to Drain Charge	Q <sub>gd</sub>	R <sub>G</sub> =10Ω	-	74.5	-	
<b>Reverse Diode Characteristics</b>						
Drain-Source Diode Forward Voltage	V <sub>F</sub>	T <sub>J</sub> =25°C , I <sub>F</sub> =38A	-	-	1.6	V
Diode Continuous Forward Current	I <sub>F</sub>		-	-	40	A
Diode Pulsed Current <sup>Note1</sup>	I <sub>F,pulse</sub>		-	-	120	A
Reverse Recovery time	T <sub>RR</sub>	I <sub>F</sub> =0.5V , I <sub>R</sub> =1.0A , I <sub>RR</sub> =0.25A	-	-	300	ns

Notes:

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle > 2%.



Typical Characteristics

Fig. 1. Maximum Drain Current vs. Case Temperature

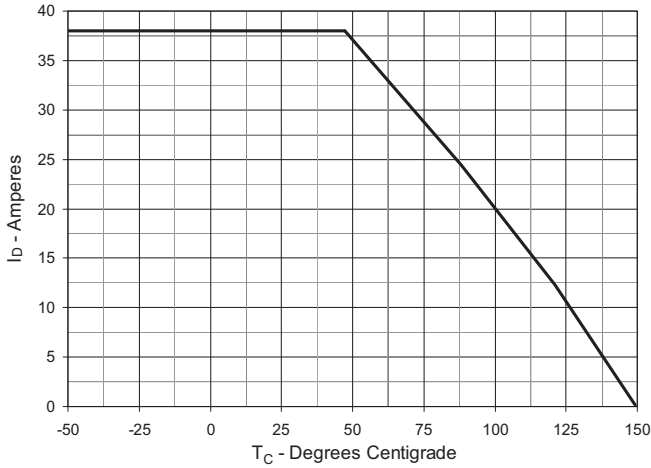


Fig. 2. Output Characteristics @ Tj = 25°C

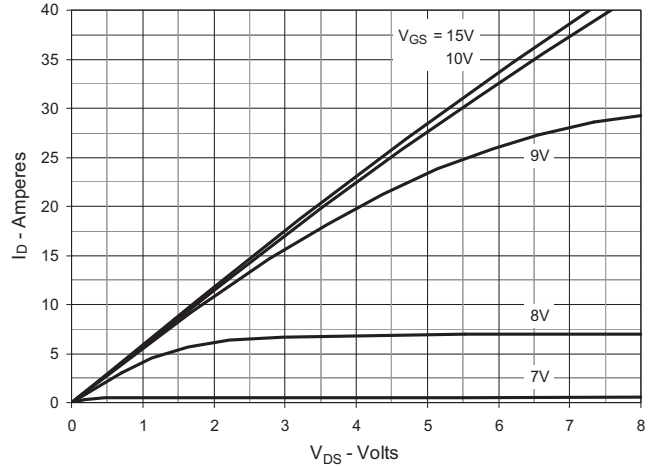


Fig. 3. Extended Output Characteristics @ Tj = 25°C

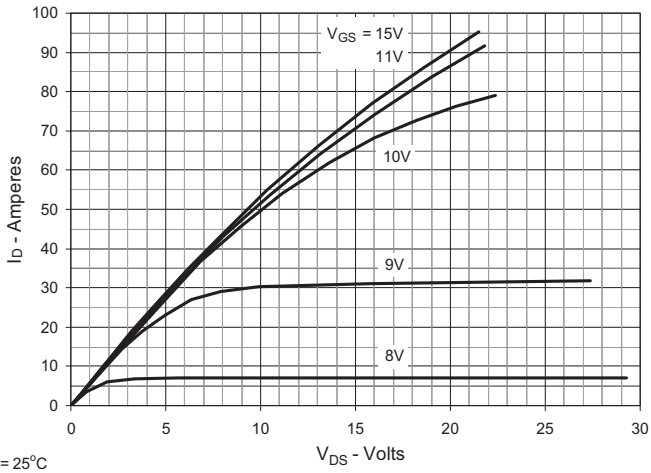


Fig. 4. Output Characteristics @ Tj = 125°C

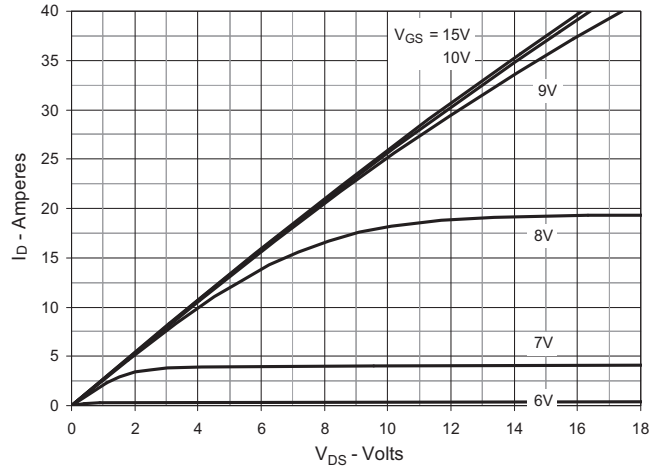


Fig. 5. RDS(on) Normalized to Id = 19A Value vs. Drain Current

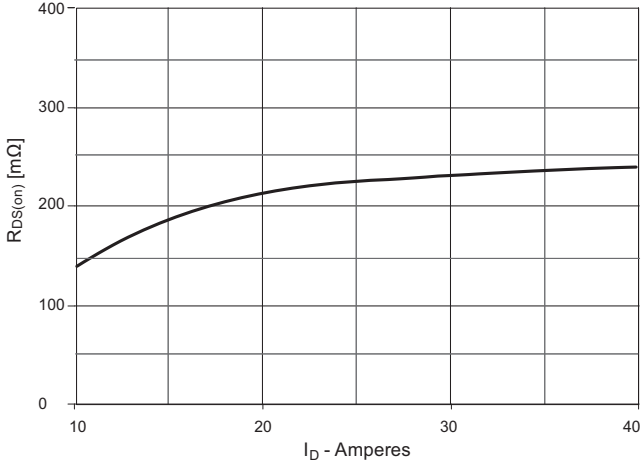
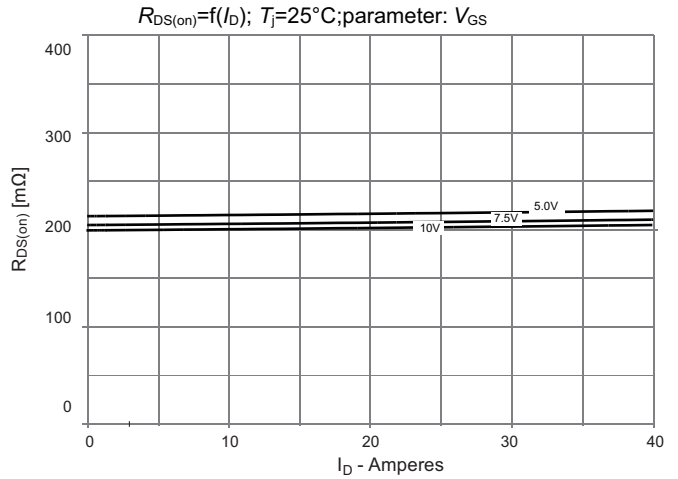


Fig 6. Typ. drain-source on resistance





Typical Characteristics

Fig. 7. Input Admittance

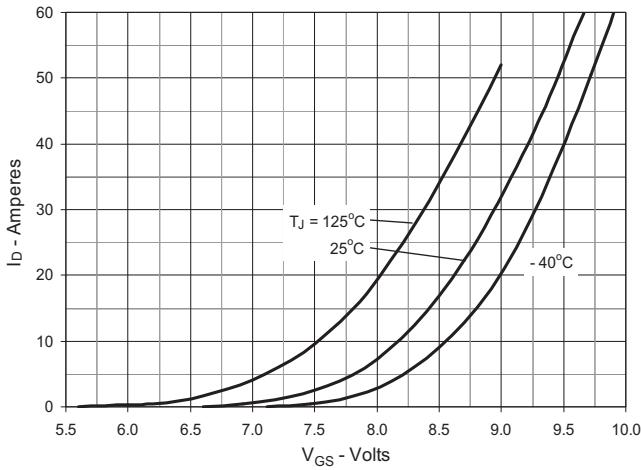


Fig. 8. Transconductance

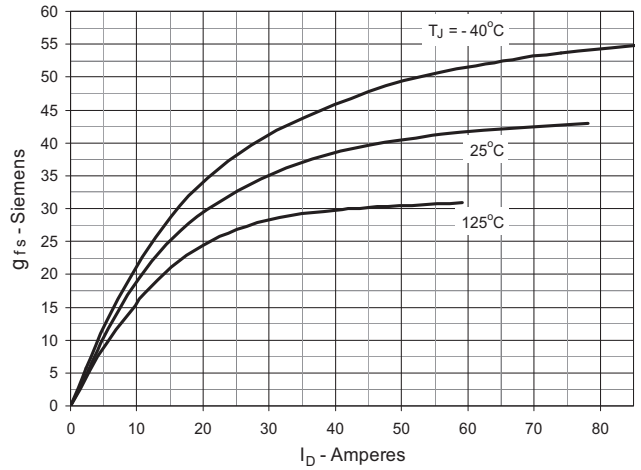


Fig. 9. Forward Voltage Drop of Intrinsic Diode

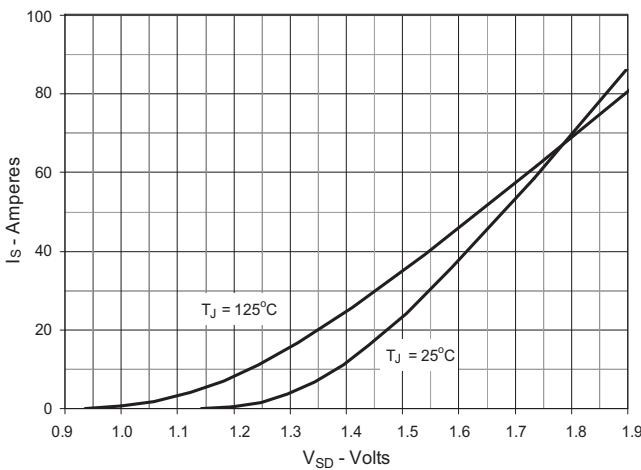


Fig. 10. Gate Charge

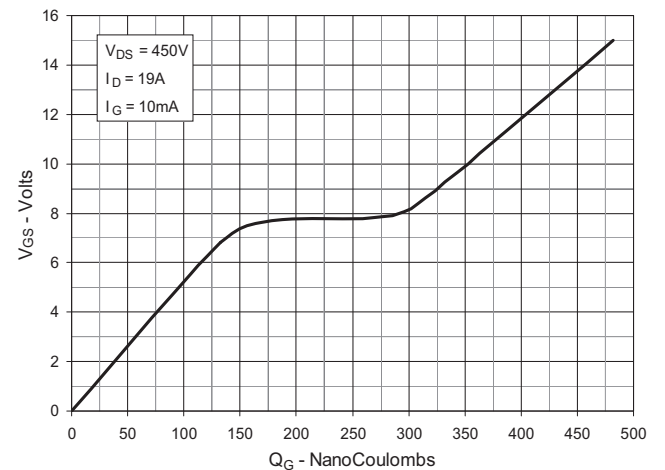


Fig. 11. Capacitance

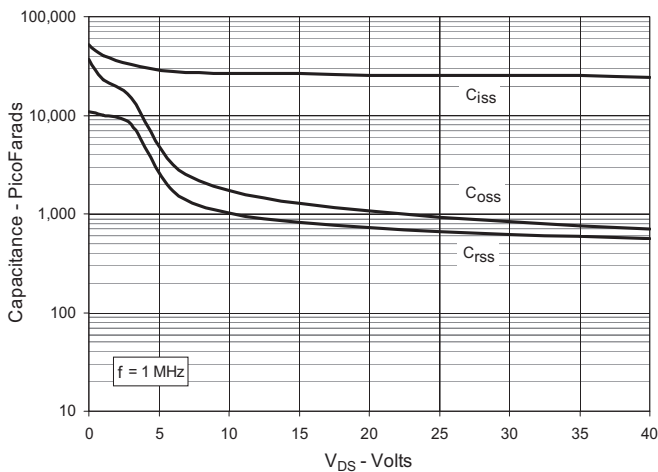
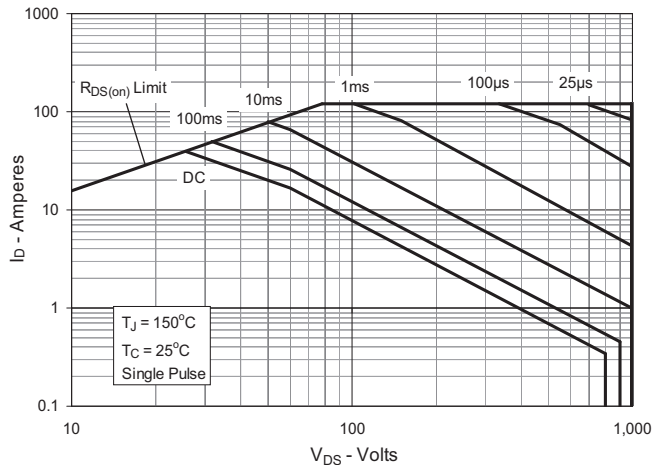


Fig. 12. Forward-Bias Safe Operating Area





Typical Characteristics

Fig 13. Forward derating curve of reverse diode

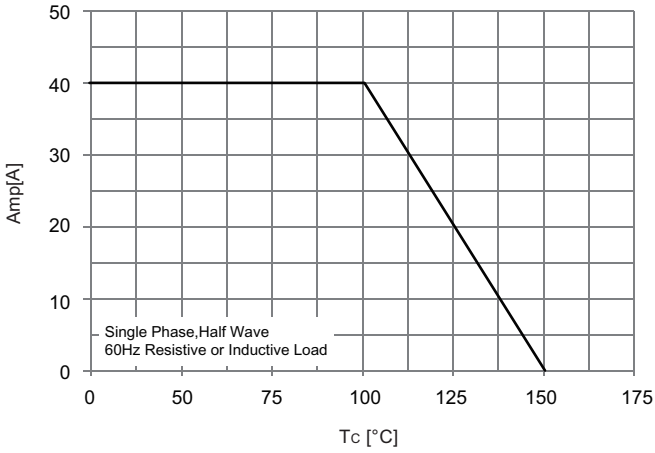


Fig 14. Peak forward surge current of reverse diode

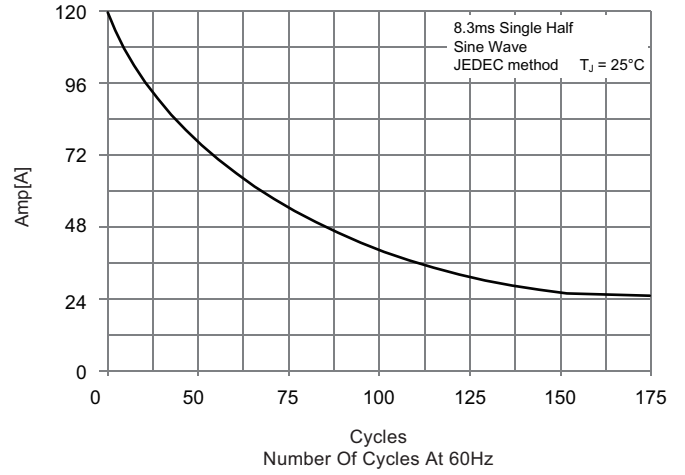
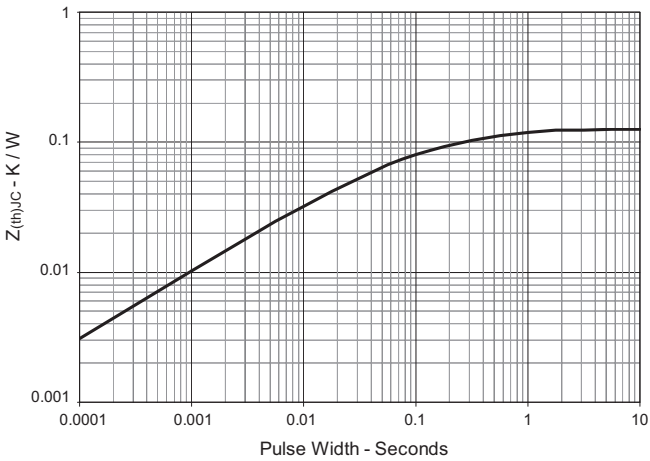


Fig 15. Maximum Transient Thermal Impedance





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