

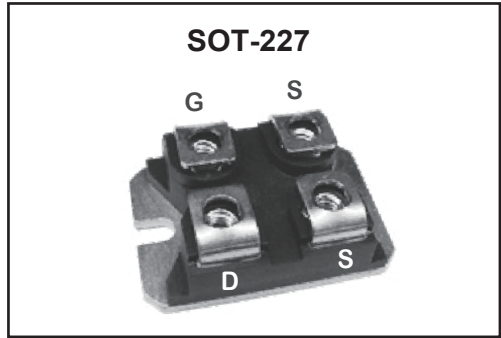
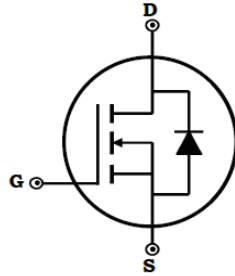


N-Channel Enhancement Mode MOSFET

Features

- ◆ $V_{DSS} = 100V$
- ◆ $R_{DS(ON)} < 1.5\ m\Omega @ V_{GS} = 10\ V$
- ◆ Fully Avalanche Rated
- ◆ Pb Free & RoHS Compliant
- ◆ Isolation Type Package
- ◆ Electrically Isolation Base Plate

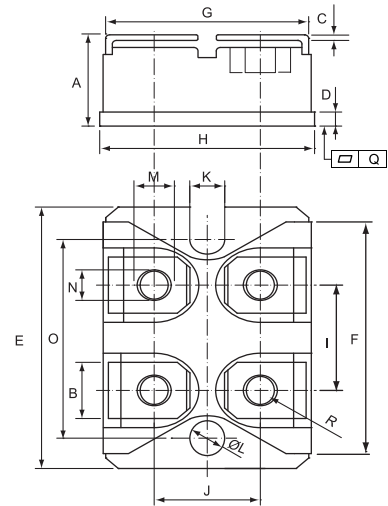
Preliminary



Dimensions in inches and (millimeters)

Applications

- ◆ Backlighting
- ◆ Power Converters
- ◆ Synchronous Rectifiers
- ◆ Battery Chargers
- ◆ AC Motor Drivers



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous @ $T_c = 25^\circ C$ @ $T_c = 100^\circ C$	I_D	450 320	A
Drain Current-Pulsed @ $T_c = 25^\circ C$	I_{DM}	1200	A
Maximum Power Dissipation	P_D	626	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	$R_{\theta_{JC}}$	0.16	°C/W
Isolation Voltage (A.C. 1 minute)	V_{ISO}	2500	V
Mounting torque (M4 Screw)	To heatsink To terminals	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_J =25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=3mA$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=100V$	-	-	50	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	200	nA
ON Characteristics						
Gate Threshold Voltage	V_{TH}	$V_{DS}=V_{GS}, I_{DS}=8mA$	2.5	-	3.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_{DS}=100A$	-	1.3	1.5	mΩ
Gate Resistance	R_G		-	1.9	2.9	Ω
Forward Transconductance	g_{fs}	$ V_{DS} > 2 I_D R_{DS(on)M}$, $I_D = 100A$ ^{Note1}	-	123	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V$	-	46880	-	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$	-	2136	-	
Reverse Transfer Capacitance	C_{rss}	Freq.=1MHz	-	1510	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V$ $V_{GS}=10V$ $I_{DS}=225A$	-	136	-	ns
Rise Time	t_r		-	56	-	
Turn-Off Delay Time	$t_{d(off)}$		-	236	-	
Fall Time	t_f		-	44	-	
Total Gate Charge at 10V	Q_g	$V_{DS}=50V$	-	369	-	nC
Gate to Source Charge	Q_{gs}	$V_{GS}=10V$	-	271	-	
Gate to Drain Charge	Q_{gd}	$I_{DS}=225A$	-	174	-	
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_F	$T_J=25^\circ C, I_F=100A$	-	-	0.9	V
Diode Continuous Forward Current	I_F		-	-	320	A
Diode Pulsed Current ^{Note1}	$I_{F,pulse}$		-	-	1200	A
Reverse Recovery time	T_{RR}	$I_F=0.5V, I_R=1.0A,$ $I_{RR}=0.25A$	-	-	290	ns

Notes:

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



Typical Characteristics

Fig 1. Power dissipation

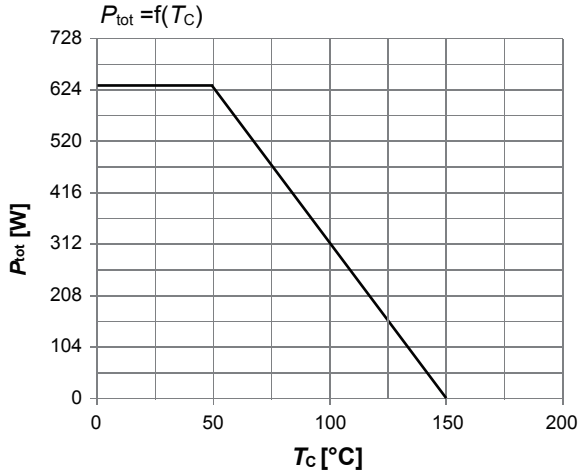


Fig 2. Drain current

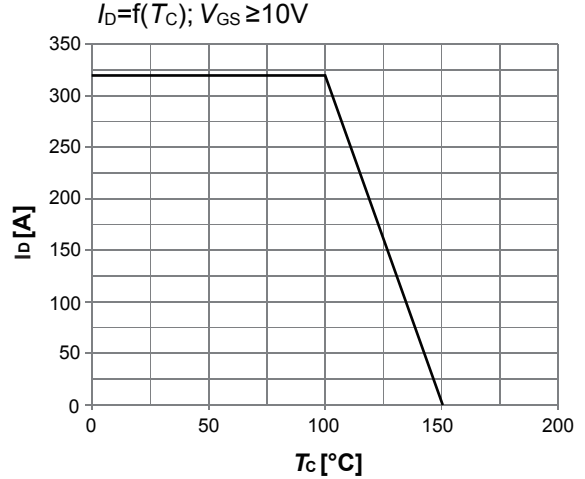


Fig 3. Safe operating area

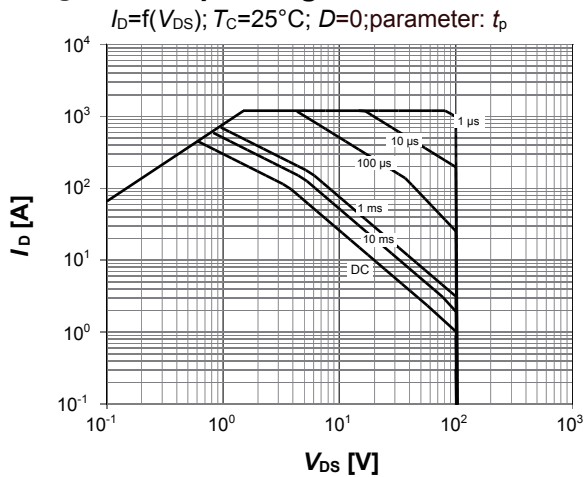


Fig 4. Maximum Transient Thermal Impedance

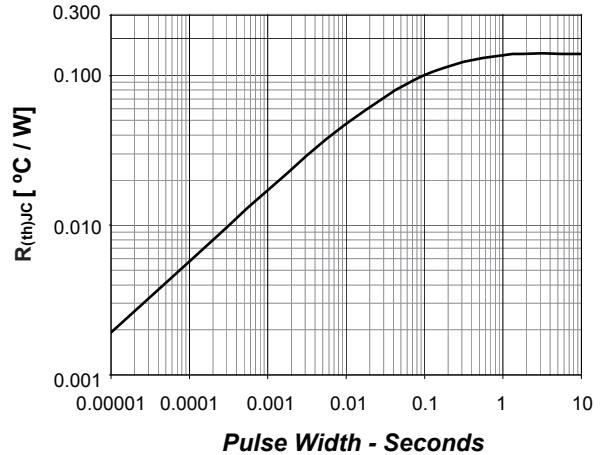


Fig 5. Typ. output characteristics

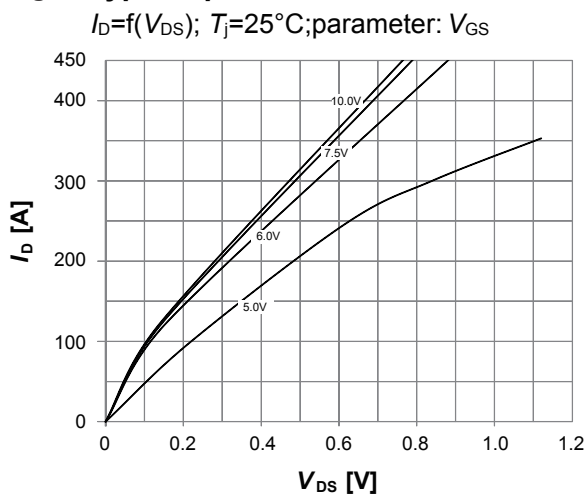
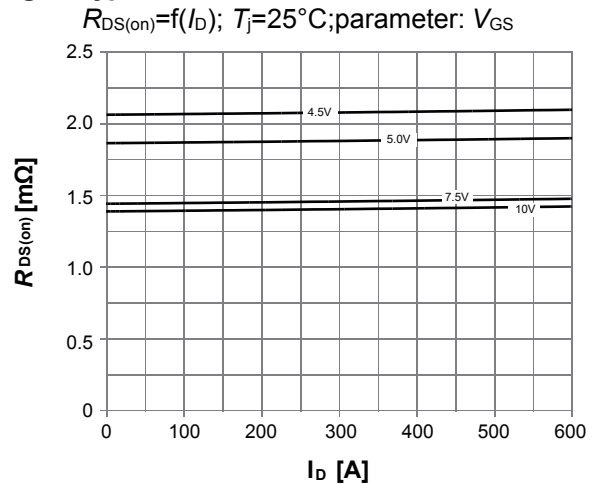


Fig 6. Typ. drain-source on resistance





Typical Characteristics

Fig 7. Typ. transfer characteristics

$I_D = f(V_{GS}); |V_{DS}| > 2|I_D|R_{DS(on)max}; \text{parameter: } T_j$

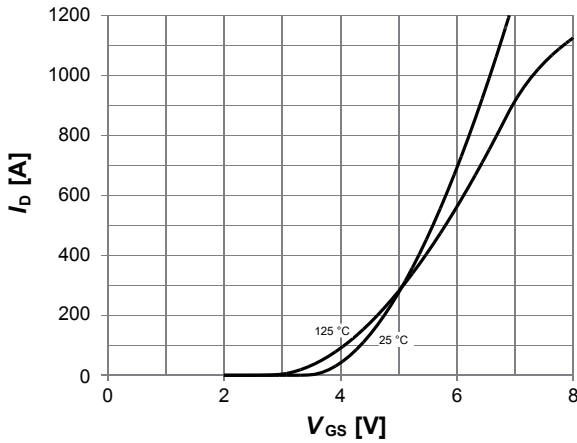


Fig 8. Typ. forward transconductance

$g_{fs} = f(I_D); T_j = 25^\circ\text{C}$

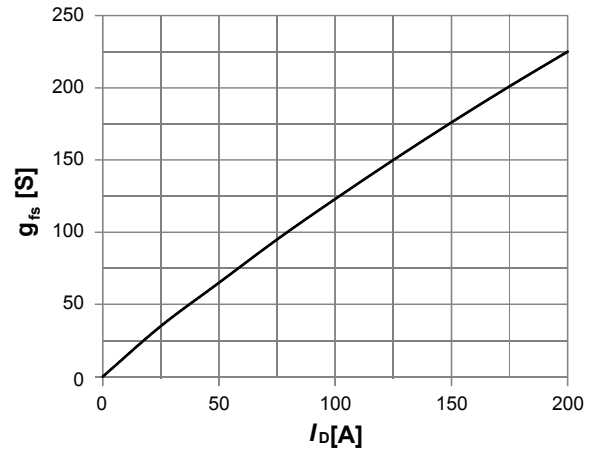


Fig 9. Drain-source on-state resistance

$R_{DS(on)} = f(T_j); I_D = 150\text{A}; V_{GS} = 10\text{V}$

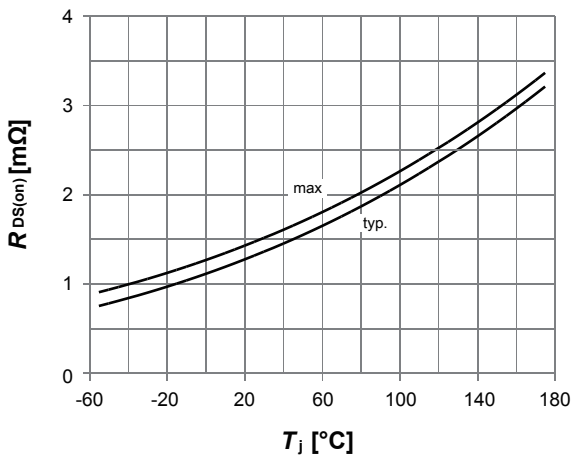


Fig 10. Typ. gate threshold voltage

$V_{GS(th)} = f(T_j); V_{GS} = V_{DS}; \text{parameter: } I_D$

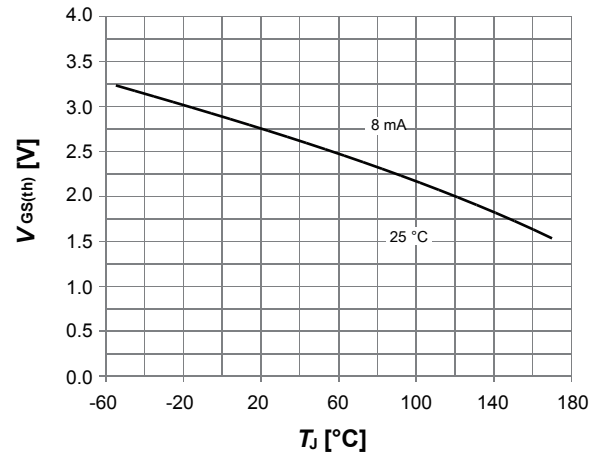


Fig 11. Typ. capacitances

$C = f(V_{DS}); V_{GS} = 0\text{V}; f = 1\text{MHz}$

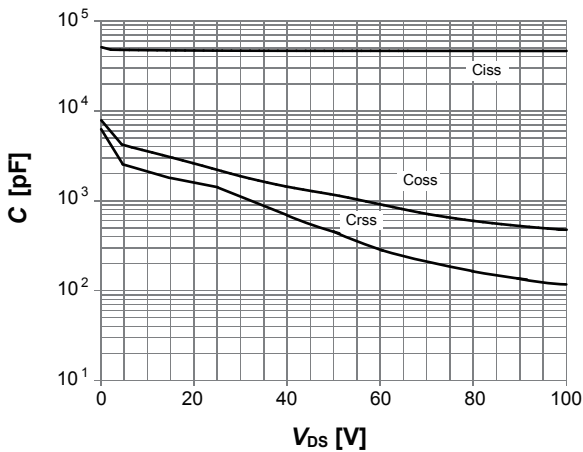
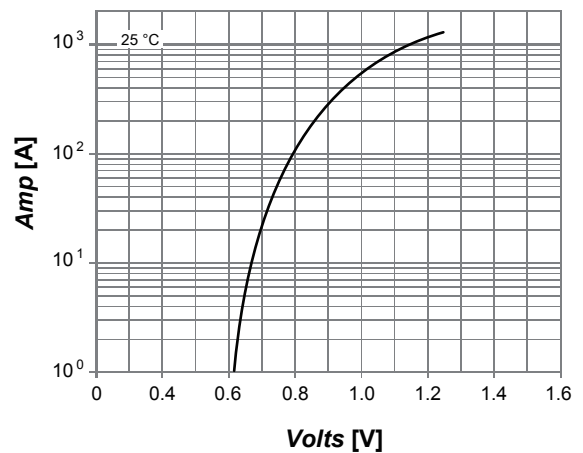


Fig 12. Typical forward characteristics of reverse diode





Typical Characteristics

Fig 13. Forward derating curve of reverse diode

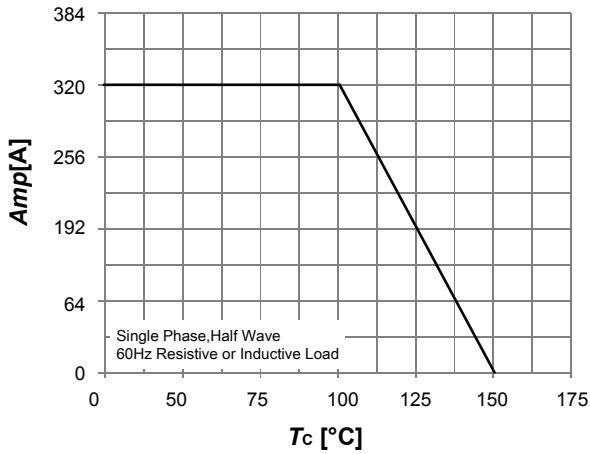


Fig 14. Peak forward surge current of reverse diode

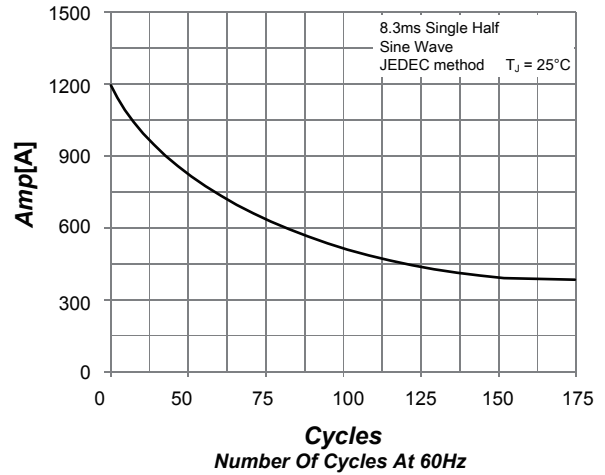


Fig 15. Typical reverse diode characteristics

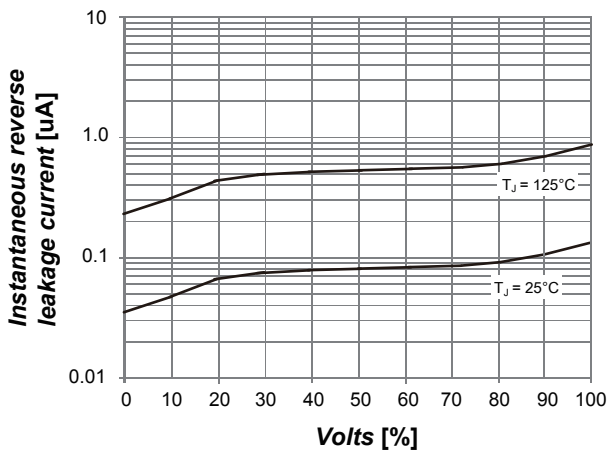


Fig 16. Typ. gate charge

V_{GS}=f(Q_{gate}); I_D=100A pulsed; parameter: V_{DD}

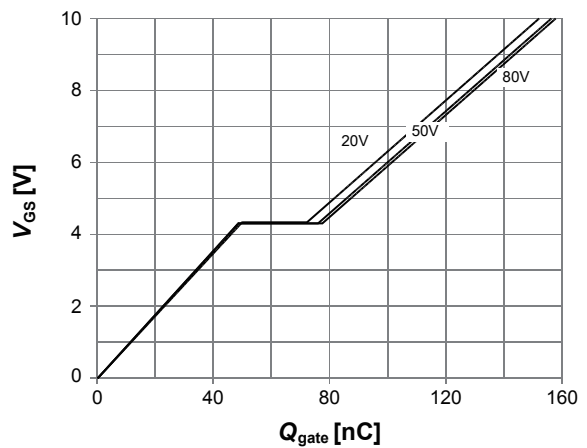
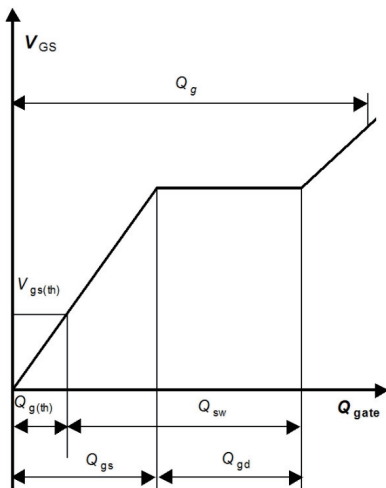


Fig 17. Gate charge waveforms





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