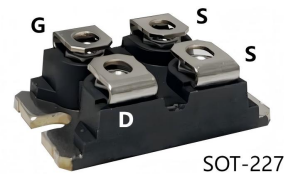


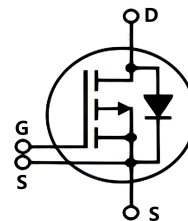
Features

- -170A, -100V, $R_{DS(on)} \leq 14m\Omega$
- High Current Handling Capability
- Fast Intrinsic Diode
- Avalanche Rated
- Low package inductance



Applications

- DC Chopper
- Push Pull Amplifiers
- High-Side switching
- Battery Chargers
- Automatic Test Equipment
- Current Regulators



Absolute Ratings (Tc=25°C, Unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	-100	V
Transient Gate-Source Voltage	V_{GSM}	± 30	V
Continuous Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current -continuous	I_D	-170	A
Drain Current - pulse*	I_{DM}	-510	A
Repetitive Avalanche current	I_{AR}	-170	A
Single Pulsed Avalanche Energy	E_{AS}	3.5	J
Power Dissipation	P_D	890	W
Operating and Storage Temperature Range	T_j, T_{STG}	-55~+150	°C
Maximum Lead Temperature for Soldering Purposes	T_L	300	°C

*Drain current limited by maximum junction temperature

Electrical Characteristics (T_{CASE}=25°C unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	$I_D = -250\mu A, V_{GS} = 0V$	-100	-	-	V
Drain cut-off current	I_{DSS}	$V_{DS} = -100V, V_{GS} = 0V$ $T_j = 125^\circ C$	-	-	-50 -250	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-1mA$	-2.0	-	-4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=-85A$ (note 1)	-	-	14	mΩ
Forward transconductance	G_{fs}	$V_{DS}=-10V, I_D=-85A$ (note 1)	35	58	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=-25V,$ $V_{GS}=0V,$ $f=1MHz$	-	12.6	-	nF
Output capacitance	C_{oss}		-	4190	-	pF
Reverse transfer capacitance	C_{rss}		-	930	-	pF
Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{GE}=-10V, V_{DD}=-50V,$ $I_D=-85A,$ $R_g=1\Omega(External)$	-	32	-	ns
Turn-On rise time	t_r		-	75	-	ns
Turn-Off delay time	$t_{d(off)}$		-	82	-	ns
Turn-Off Fall time	t_f		-	45	-	ns
Total Gate Charge	Q_g	$V_{DS}=-50V,$ $I_D=-85A,$ $V_{GS}=-10V$	-	240	-	nC
Gate-Source charge	Q_{gs}		-	40	-	nC
Gate-Drain charge	Q_{gd}		-	120	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-85A,$ (note1)	-	-	-3.3	V
Continuous Drain-Source Diode Forward Current	I_S		-		-170	A
Reverse recovery time	t_{rr}	$I_F=-85A$ $-dI_F/dt=-100A/us$ $V_R=-50V, V_{GS}=0V$	-	176	-	ns
Reverse recovery charge	Q_{rr}		-	1250	-	nC
Reverse recovery current	I_{rr}		-	-14.2	-	A

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case,Max	$R_{\theta JC}$	0.14	°C/W

Notes:

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

Typical Electrical and Thermal Characteristics (Curves)

Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

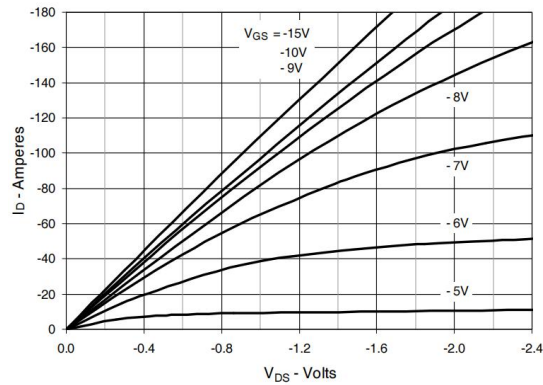


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

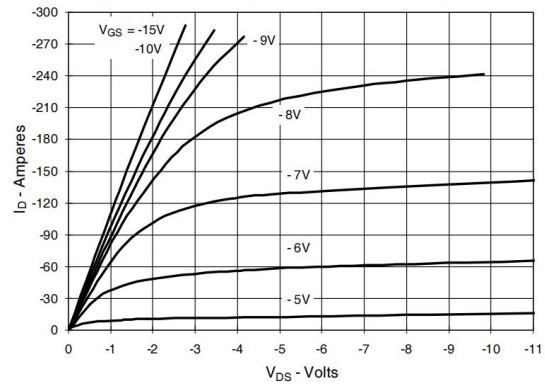


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

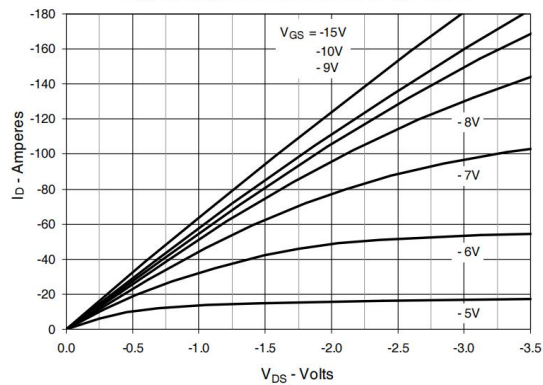


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = -85\text{A}$ Value vs. Junction Temperature

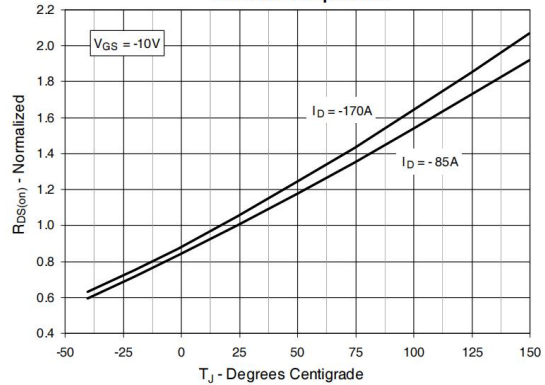


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = -85\text{A}$ Value vs. Drain Current

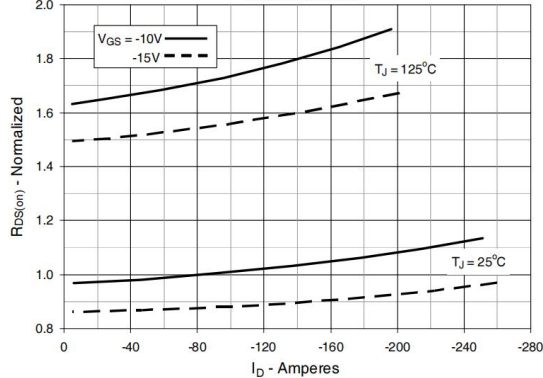


Fig. 6. Maximum Drain Current vs. Case Temperature

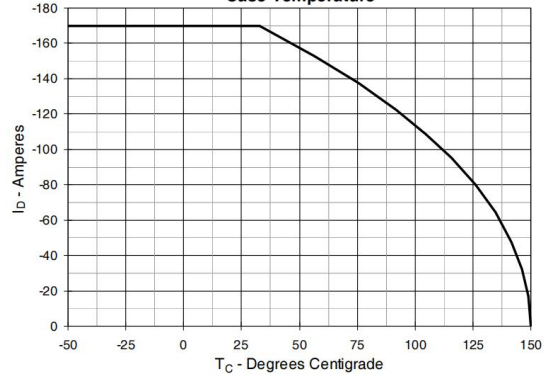


Fig. 7. Input Admittance

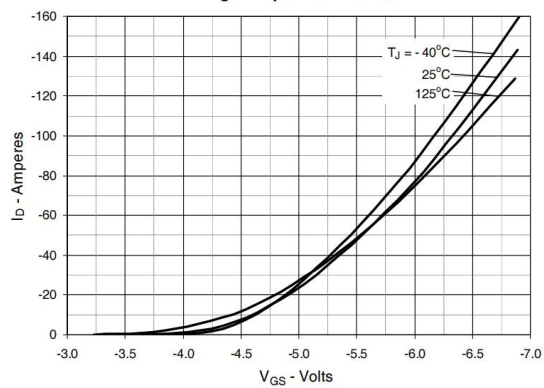


Fig. 8. Transconductance

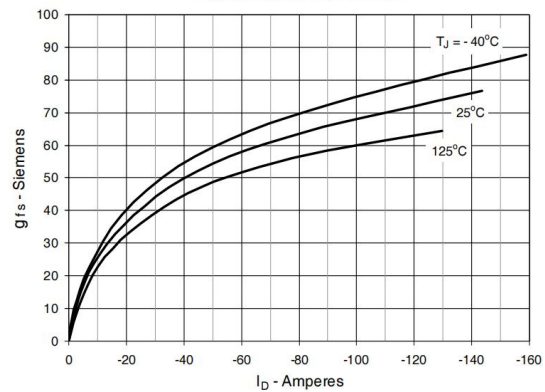


Fig. 9. Forward Voltage Drop of Intrinsic Diode

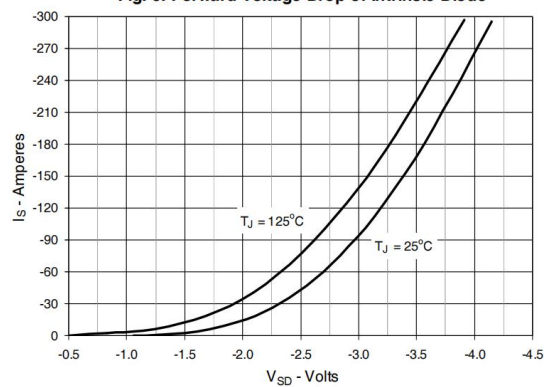


Fig. 10. Gate Charge

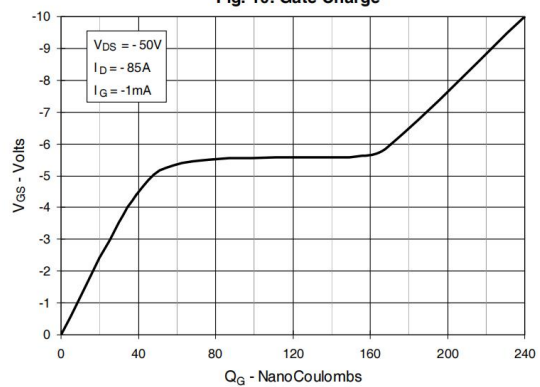


Fig. 11. Capacitance

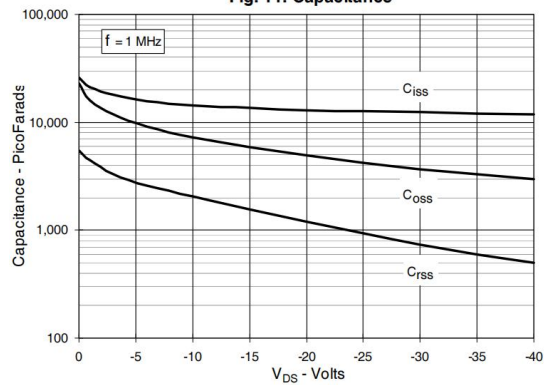


Fig. 12. Safe Operating Area

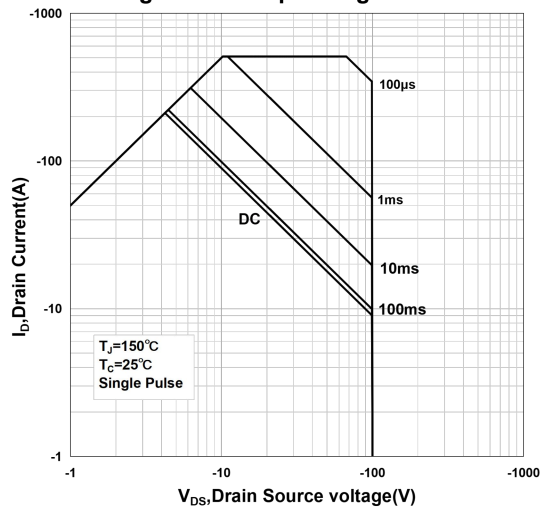
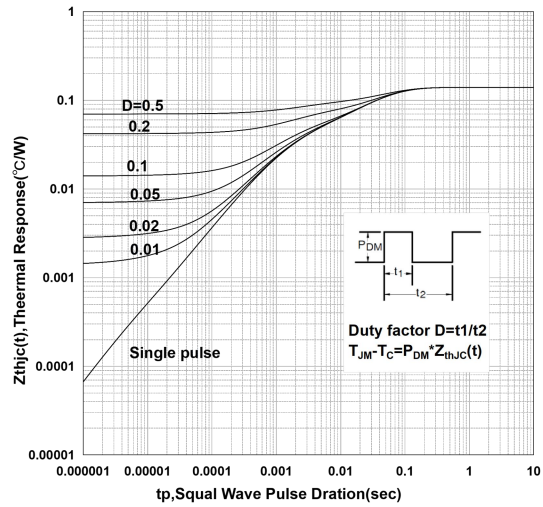
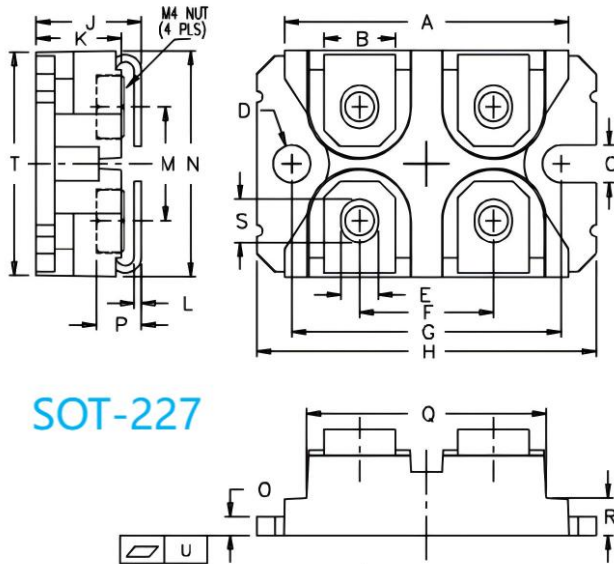


Fig. 13. Transient response Curve



Package Mechanical DATA



Dim.	Milimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.66	32.06	1.246	1.262
B	7.80	8.20	0.307	0.323
C	4.00	4.40	0.157	0.173
D	4.00	4.40	0.157	0.173
E	4.00	4.40	0.157	0.173
F	14.45	14.85	0.569	0.585
G	30.00	30.40	1.181	1.197
H	37.99	38.39	1.496	1.511
J	11.67	12.07	0.459	0.475
K	9.33	9.73	0.367	0.383
L	0.65	1.05	0.025	0.041
M	12.15	12.55	0.478	0.494
N	24.90	25.30	0.980	0.996
O	1.85	2.25	0.073	0.089
P	5.00	5.40	0.197	0.213
Q	26.60	27.00	1.047	1.063
R	4.05	4.45	0.159	0.175
S	4.49	4.89	0.177	0.193
T	24.78	25.18	0.976	0.991
U	-0.05	0.10	-0.002	0.004