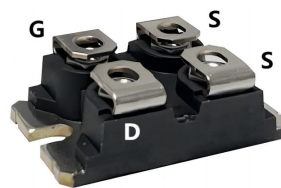


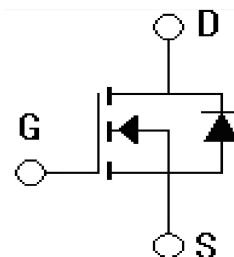
Features

- $V_{DS}=500V, I_D=100A$
 $R_{DS(on)(typ.)}=54m\Omega @ V_{GS}=10V$
- 100% avalanche tested
- Low Q_g
- Minimum Lot-to-Lot variations for robust device
- performance and reliable operation



Applications

- ZVS phase shifted and other full bridge
- Half bridge
- PFC and other boost converter
- Buck converter
- Linear amplifier



Absolute Ratings ($T_C=25^\circ C$)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	500	V
Transient Gate-Source Voltage	V_{GSM}	± 30	V
Continuous Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current-continuous	I_D	$T_C=25^\circ C$	A
		$T_C=100^\circ C$	
Drain Current-pulse(note 1)	I_{DM}	300	A
Single Pulsed Avalanche Energy(note 2)	E_{AS}	6944	mJ
Avalanche Current, Repetitive or Non-Repetitive	I_{AR}	50	A
Maximum Power Dissipation	P_D	625	W
Operating and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^\circ C$
Maximum lead temperature for soldering plastic body for 10s	T_L	300	$^\circ C$

Electrical Characteristics($T_{CASE}=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=1mA, V_{GS}=0V$	500	-	-	V
Zero Gate Voltage Drain	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0V$	-	-	25	μA

Current						
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On-Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =1mA	3.0	3.8	5.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A (note 3)	-	54	70	mΩ
Forward Transconductance	g _{fs}	V _{DS} =50V, I _D =10A (note 3)	25	-	-	S
Dynamic Characteristics						
Input capacitance	C _{iSS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	6800	-	pF
Output capacitance	C _{oSS}		-	820	-	pF
Reverse transfer capacitance	C _{rSS}		-	40	-	pF
Switching-Characteristics						
Turn-On delay time	t _{d(on)}	V _{DS} =250V, I _D =50A, R _g =1.0Ω, V _{GS} =15V (note 4)	-	28	-	ns
Turn-On rise time	t _r		-	30	-	ns
Turn-Off delay time	t _{d(Off)}		-	52	-	ns
Turn-Off rise time	t _f		-	14	-	ns
Total Gate Charge	Q _g	V _{DS} =250V, I _D =50A, V _{GS} =10V	-	170	-	nC
Gate-Source charge	Q _{gs}		-	48	-	nC
Gate-Drain charge	Q _{gd}		-	70	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A	-	0.84	1.2	V
Diode Forward Current	I _S	T _C =25℃	-	-	100	A
Reverse recovery time	T _{rr}	I _S =100A, di/dt=100A/μs V _R =100V, V _{GS} =0V (note 3)	-	320	-	ns
Reverse recovery charge	Q _{rr}		-	3.1	-	μC
Reverse recovery current	I _{rr}		-	60	-	A

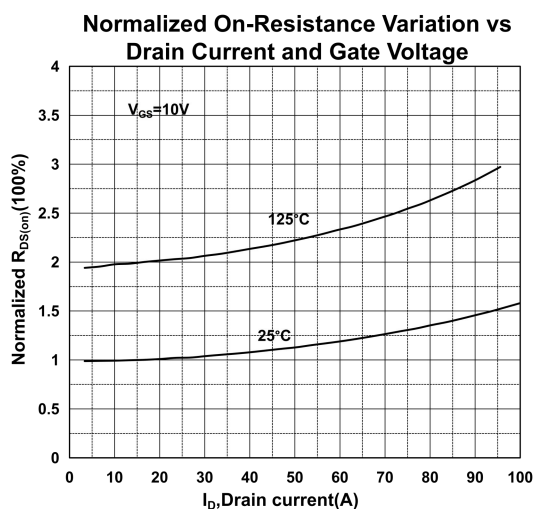
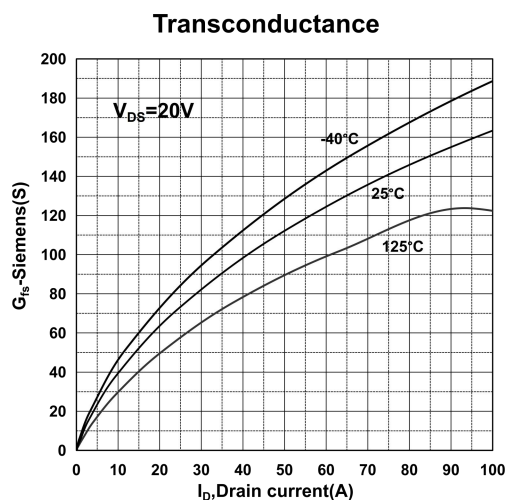
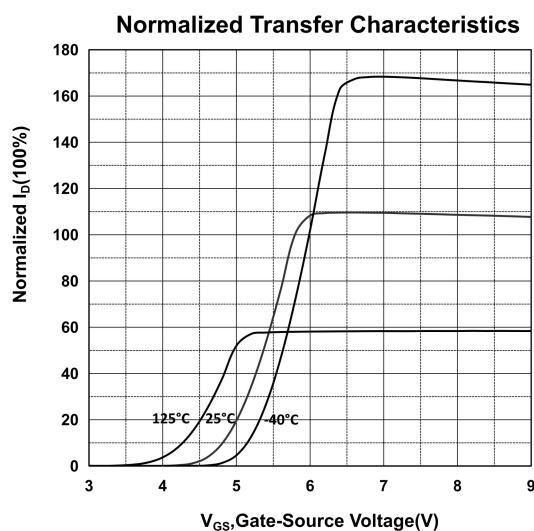
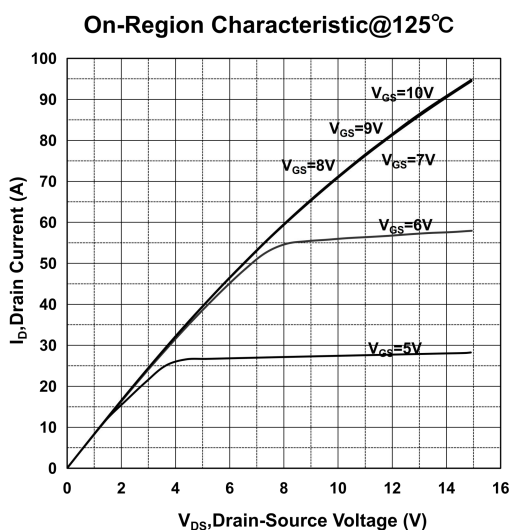
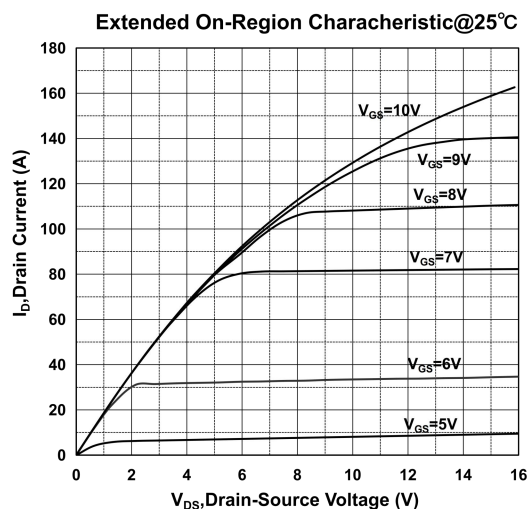
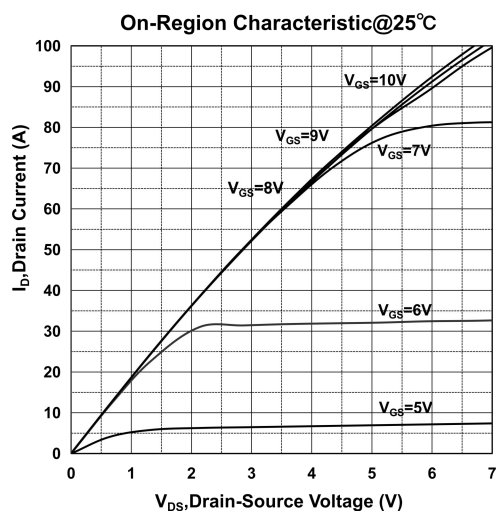
Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, junction to Case, Max	$R_{th(j-c)}$	0.20	$^\circ C/W$
Thermal Resistance, Junction to Ambient, Max	$R_{th(j-a)}$	40	

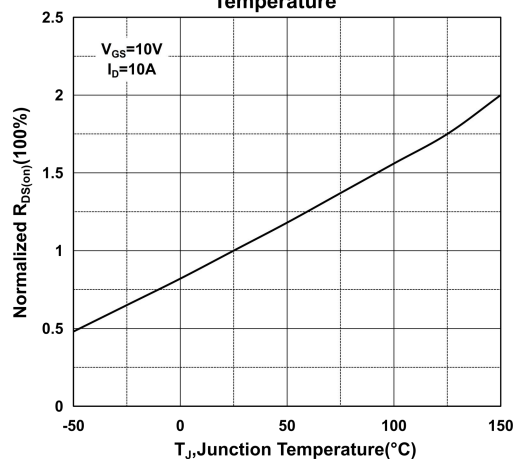
Notes:

1. Repetitive Rating: Pulse width and case temperature limited by maximum junction temperature.
2. Starting at $T_J = 25^\circ C$, $L = 10mH$, $R_G = 25\Omega$, $I_{AS} = 50A$.
3. Pulse test: Pulse Width $< 300\mu s$, duty cycle $< 2\%$
4. R_G is external gate resistance, not including internal gate resistance or gate driver impedance.

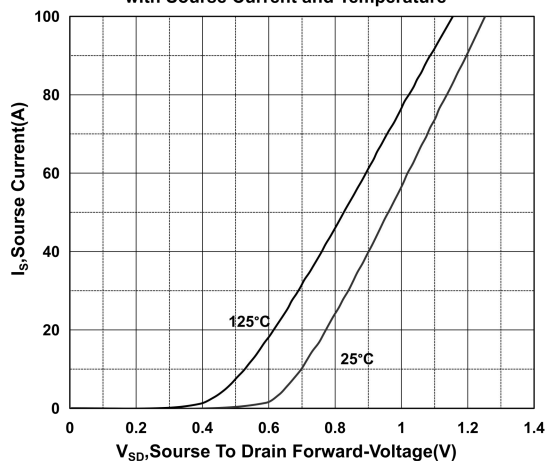
Electrical Characteristics



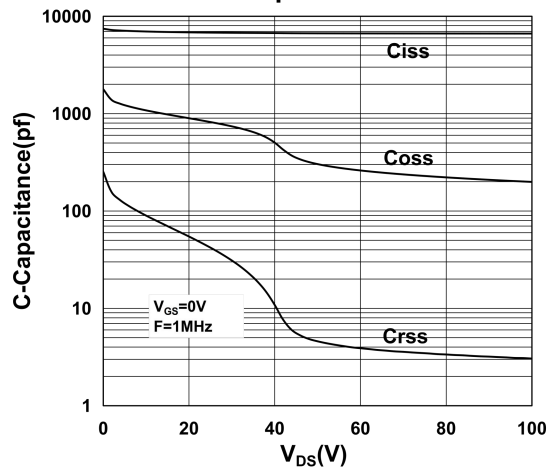
Normalized On-Resistance Variation vs Temperature



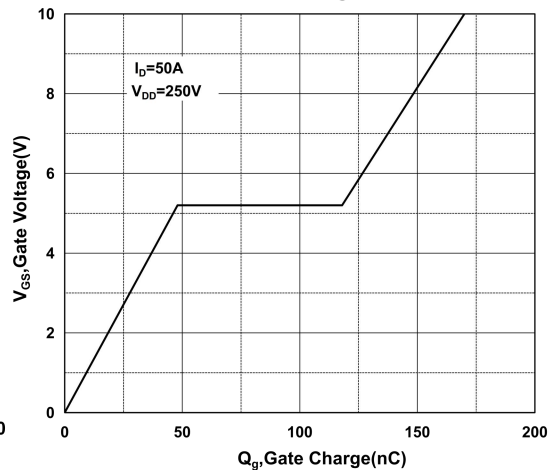
Body Diode Forward Voltage Variation with Source Current and Temperature



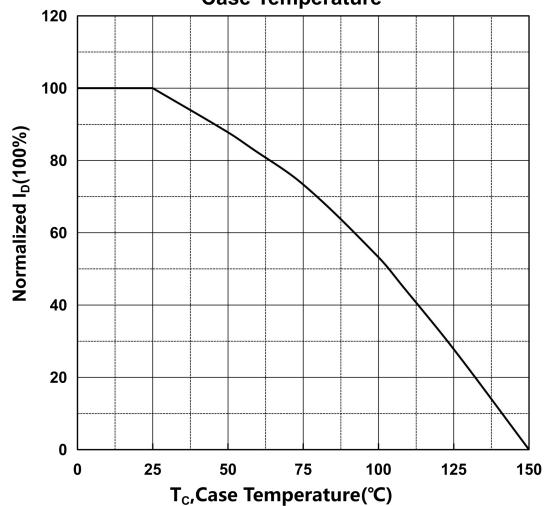
Capacitance



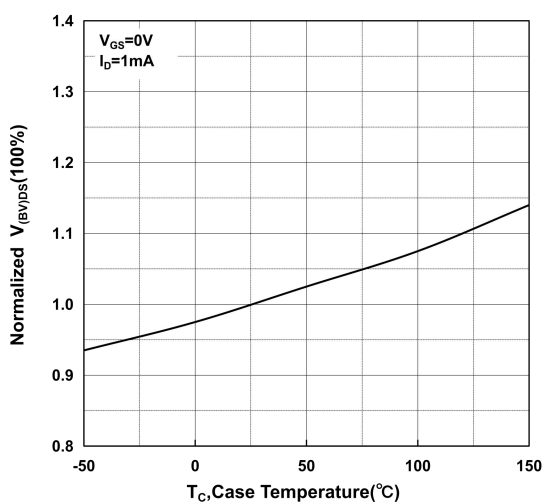
Gate Charge



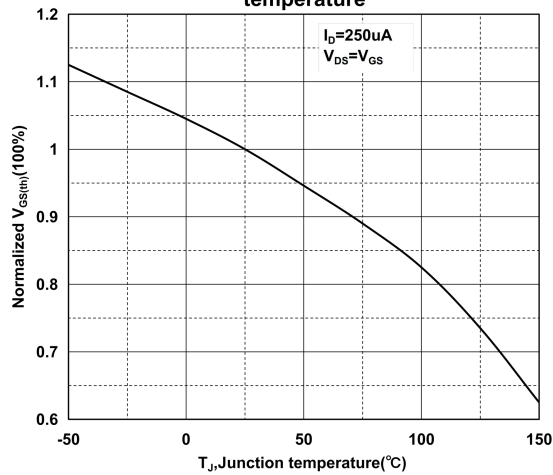
Normalized Maximum Drain Current vs Case Temperature



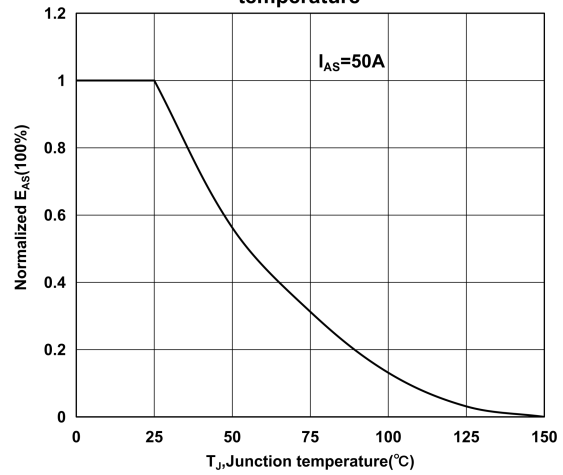
Normalized $V_{(BV)DS}$ vs temperature



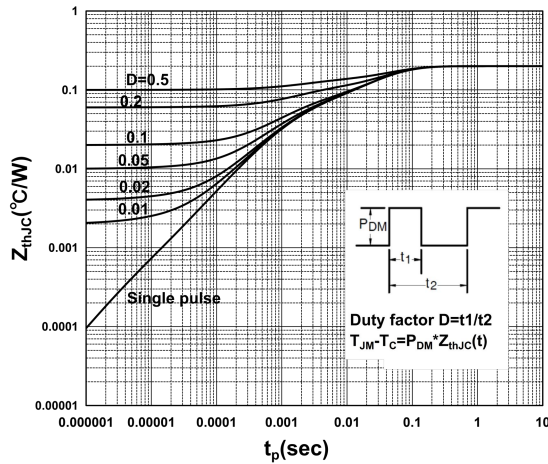
Normalized gate threshold voltage vs temperature



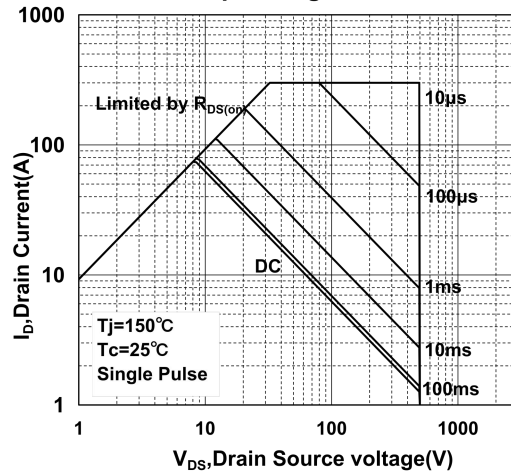
Normalized Maximum avalanche energy vs temperature



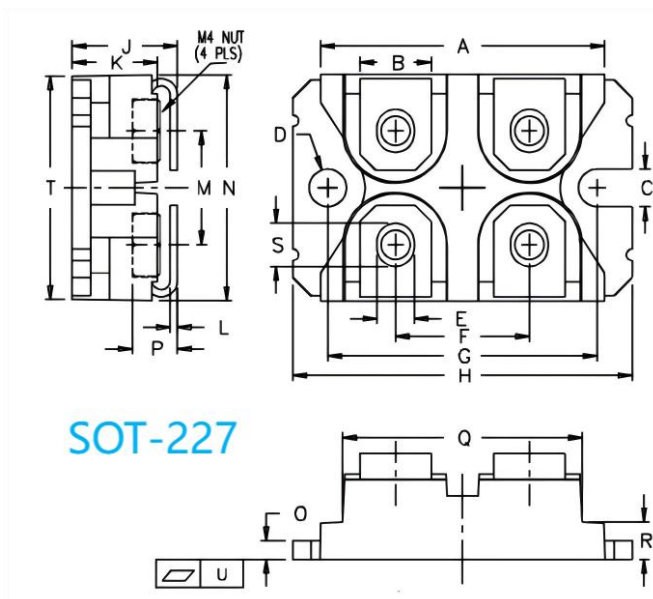
Transient Thermal Response Curve



Safe Operating Area



Package Mechanical DATA



Dim.	Millimeter		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