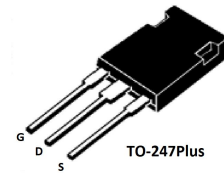


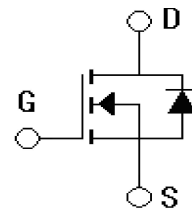
Features

- Low $R_{DS(on)}$
- Fast switching
- 100% avalanche tested
- Low package inductance
- Low intrinsic Rectifier
- RoHS Compliant



Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC chopper
- Temperature and lighting controls
- Linear current regulators



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

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V _{DSS}		75	V
Transient Gate-Source Voltage	V _{GSM}		±30	V
Continuous Gate-Source Voltage	V _{GSS}		±20	V
Drain Current -continuous	I _D	T=25℃(chip Capability)	240	A
		T=25℃(package limit)	160	A
		T=100℃	120	A
Drain Current - pulse （note 1）	I _{DM}		720	A
Single Pulsed Avalanche Energy （note 2）	E _{AS}		7200	mJ
Avalanche Current （note 1）	I _{AR}		120	A
Peak Diode Recovery dv/dt （note 3）	dv/dt		5.0	V/ns
Power Dissipation	P _D	T _C =25℃	961	W
		T _C =100℃	384	W
Operating and Storage Temperature Range	T _j , T _{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T _L		300	℃

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 =250uA,V _{GS} =0V	75	-	-	V
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	I _D =250μA, referenced to 25℃	-	0.64	-	V/℃
Drain cut-off current	I _{DSS}	V _{DS} =75V,V _{GS} =0V	-	-	10	μA
		V _{DS} =75V, V _{GS} =0V,T _j =125℃	-	-	100	
Gate-body leakage current,forward	I _{GSSF}	V _{DS} =0V,V _{GS} =20V	-	-	100	nA
Gate-body leakage current,reverse	I _{GSSR}	V _{DS} =0V,V _{GS} =-20V	-	-	-100	nA
On-Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	2	-	4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V,I _D =120A (note 3)	-	8	10	mΩ
Forward Transconductance	g _{fs}	V _{DS} =40V , I _D =120A (note 3)	-	93	-	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	17236	-	pF
Output capacitance	C _{oss}		-	3679	-	pF
Reverse transfer capacitance	C _{rss}		-	558	-	pF
Switching Characteristics						
Turn-On delay time	t _{d(on)}	V _{DD} =30V,I _D =120A, R _G =25Ω, V _{GS} =10V(note 4,5)	-	32	-	ns
Turn-On rise time	t _r		-	185	-	ns
Turn-Off delay time	T _{d(off)}		-	214	-	ns
Turn-Off Fall time	t _f		-	41	-	ns
Total Gate Charge	Q _g	V _{DS} =40V, I _D =120A, V _{GS} =10V (note4,5)	-	530	-	nC
Gate-Source charge	Q _{gs}		-	95	-	nC
Gate-Drain charge	Q _{gd}		-	194	-	nC

Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=120A$ (note 3)	-	-	1.4	V
Continuous Drain-Source Diode Forward Current	I_S		-	-	240	A
Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	720	A
Reverse recovery time	t_{rr}	$V_{GS}=0V, I_F=120A$ $di_F/dt=100A/\mu s$ (note 4)	-	150	-	ns
Reverse recovery current	I_{rr}		-	15	-	A
Reverse recovery charge	Q_{rr}		-	982	-	nC

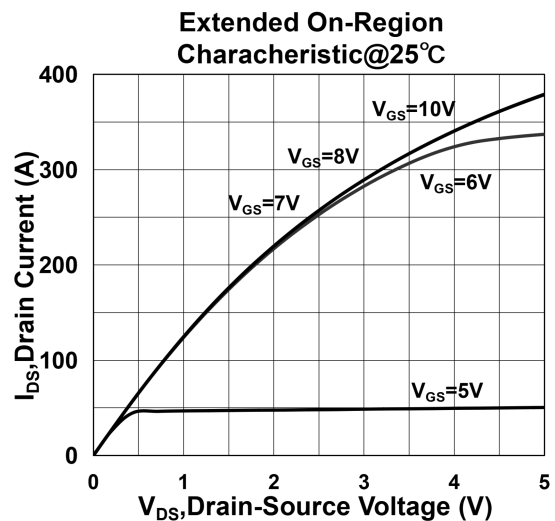
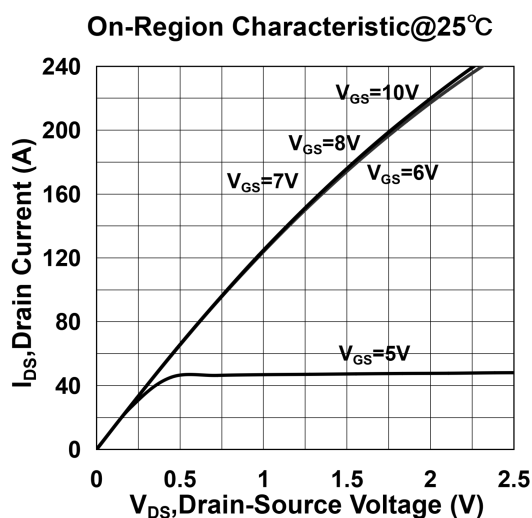
Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case,max	$R_{\theta JC}$	0.13	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient,max	$R_{\theta JA}$	40	$^{\circ}C/W$

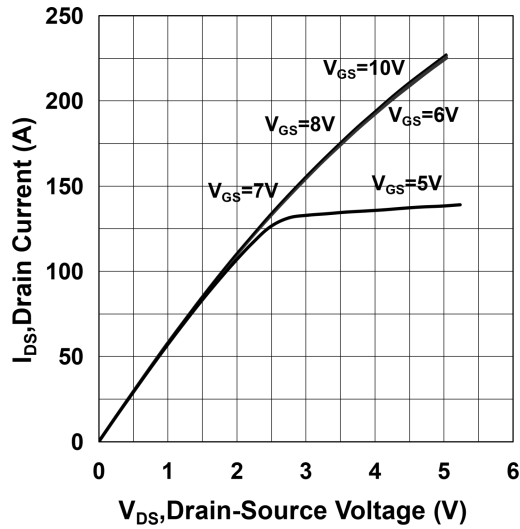
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: $L=0.5mH, I_{AS}=I_{AR}, V_{DD}=50V, R_G=25\ \Omega$, Starting $T_J=25^{\circ}C$
- 3: $I_{SD} \leq 100A, di/dt \leq 300A/\mu s, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^{\circ}C$
- 4: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 5: Essentially independent of operating temperature

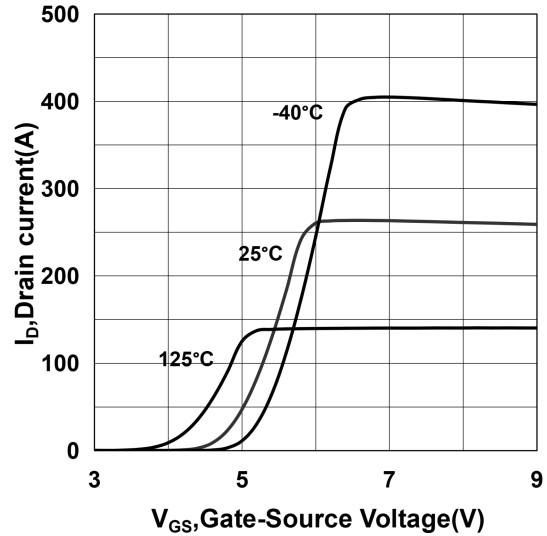
Electrical Characteristics



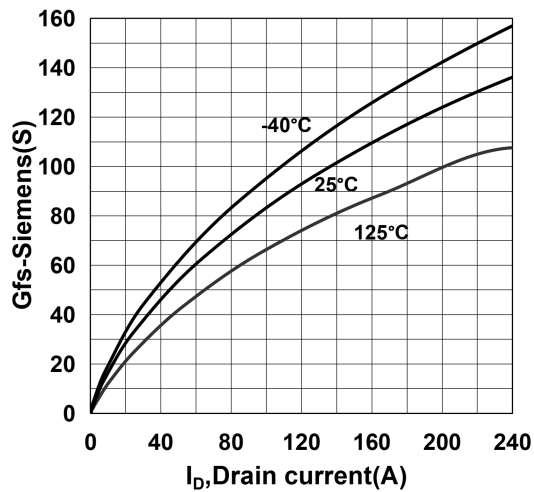
On-Region Characteristic@125°C



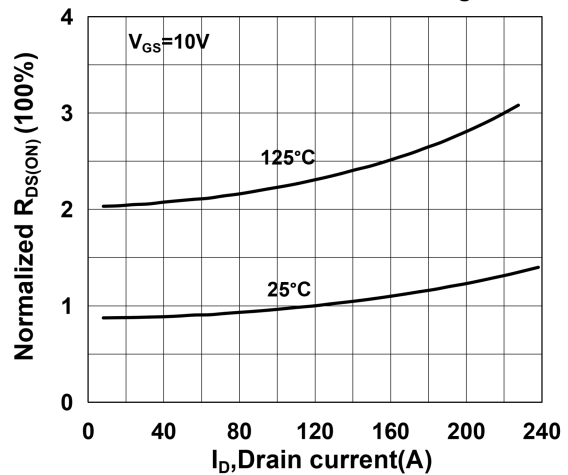
Transfer Characteristics



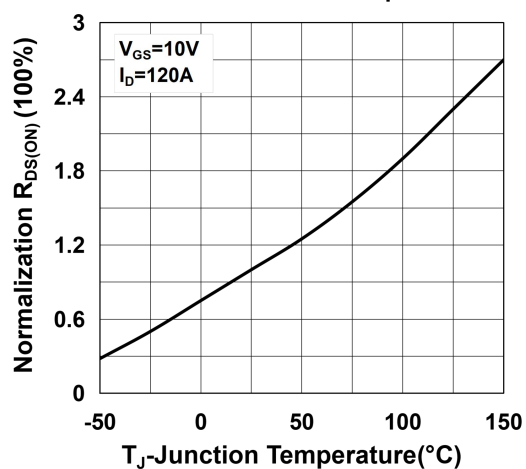
Transconductance



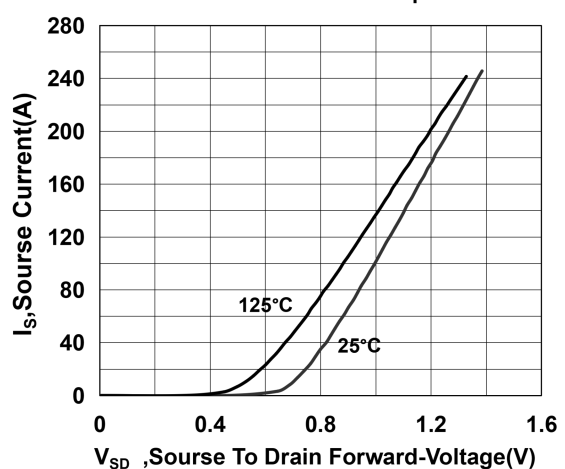
Normalized On-Resistance Variation vs Drain Current and Gate Voltage



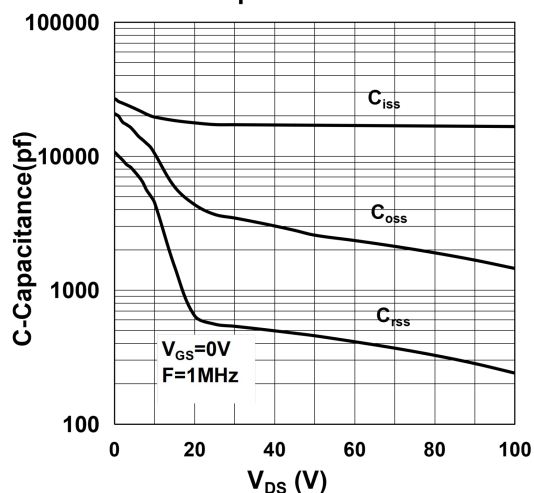
Normalization On-Resistance Variation vs Junction Temperature



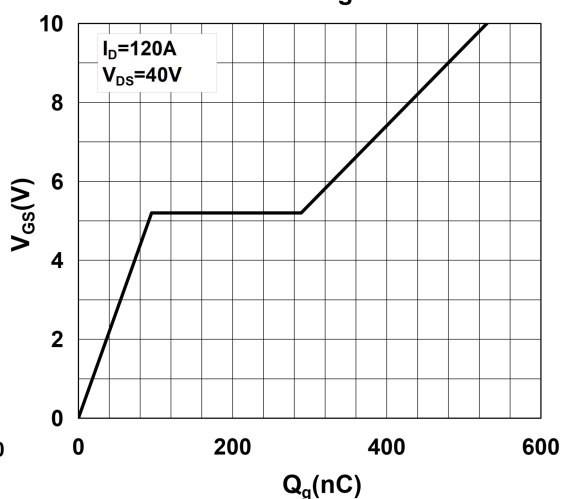
Body Diode Forward Voltage Variation with Source Current and Temperature



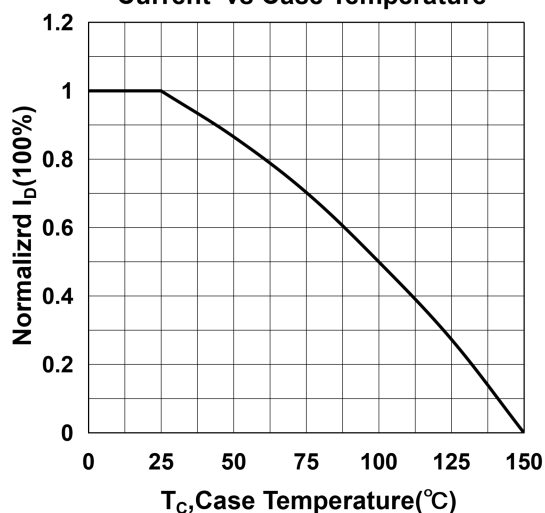
Capacitance



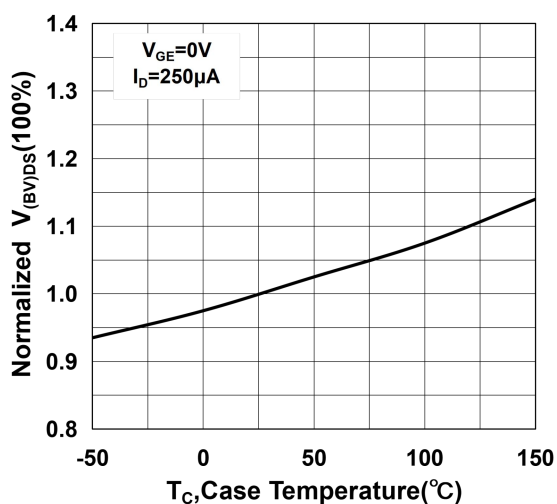
Gate Charge



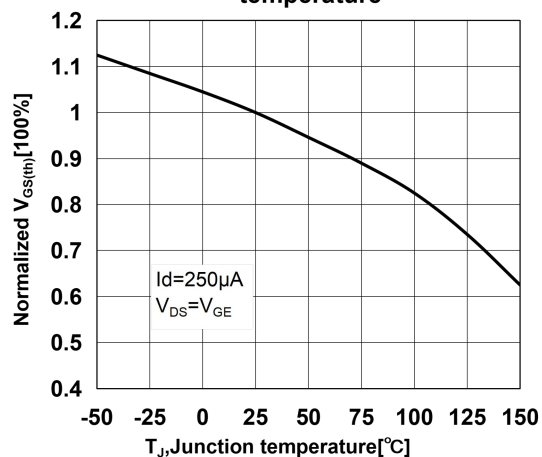
Normalized Maximum Drain Current vs Case Temperature



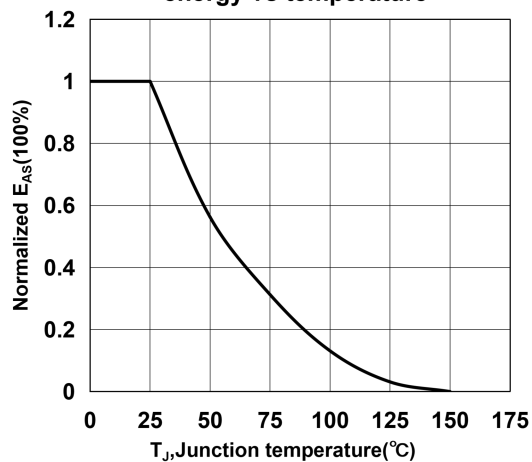
Normalized $V_{(BV)DS}$ vs temperature



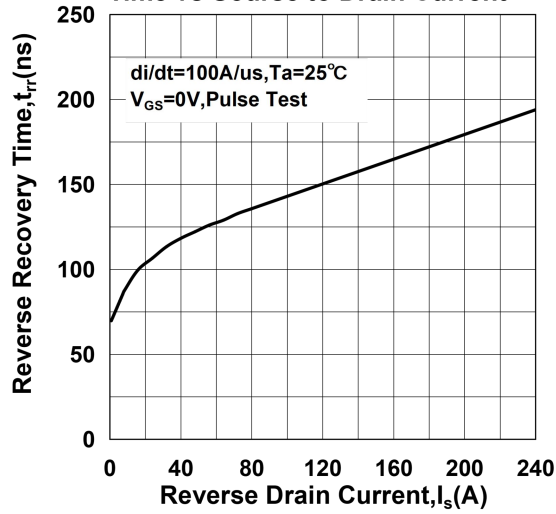
Normalized gate threshold voltage vs temperature



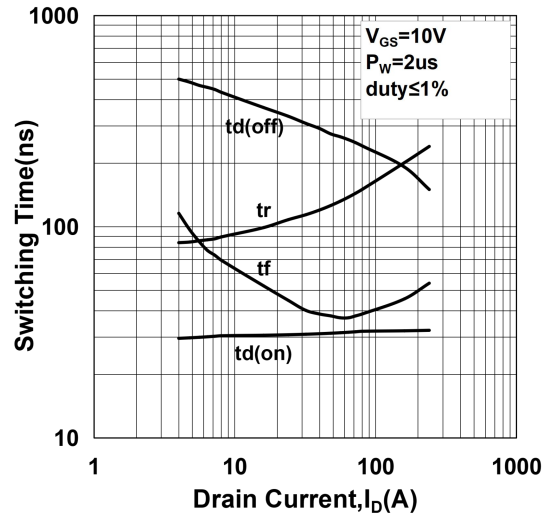
Normalized maximum avalanche energy vs temperature



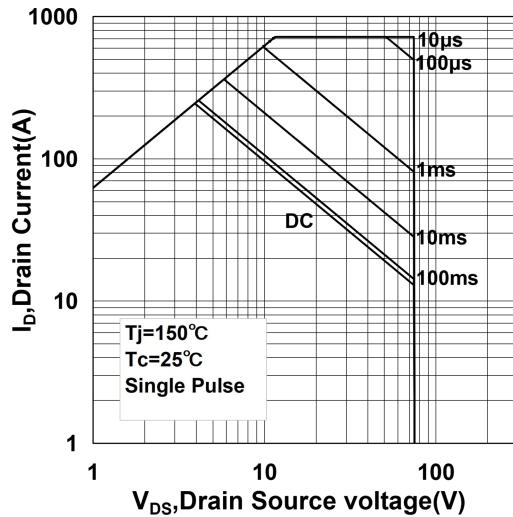
Body Diode Reverse Recovery Time vs Source to Drain Current



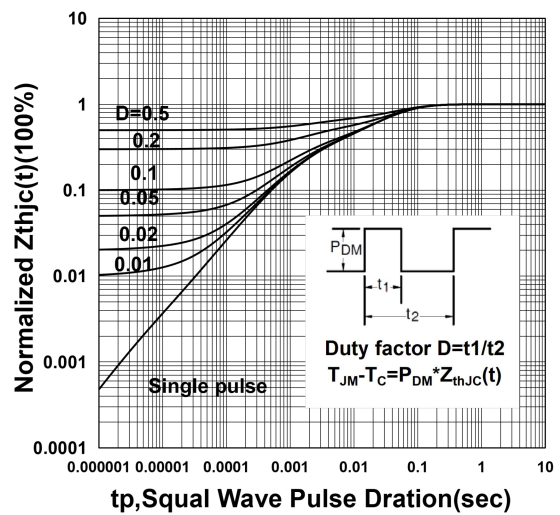
Switching Characteristics



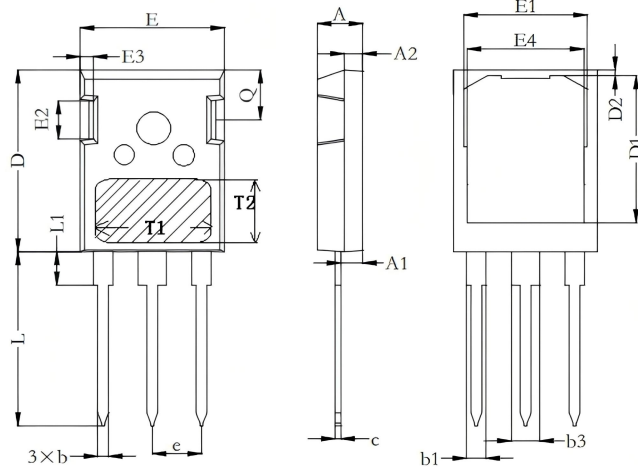
Safe Operating Area



Normalized Transient response Curve



Package Mechanical DATA



Symbol	min	Nom	max
A	4.80	5.00	5.20
A1	2.25	2.40	2.55
A2	1.85	2.00	2.15
b	1.10	1.20	1.25
b1	1.90	2.00	2.10
b3	2.90	3.00	3.20
c	0.50	0.60	0.70
e	5.44BSC		
D	20.70	20.90	21.10
D1	16.56	16.76	16.96
D2	0.45	0.55	0.65
E	15.67	15.87	16.07
E1	13.80	14.00	14.20
E2	4.05	4.25	4.45
E3	1.40	1.60	1.80
E4	13.00	13.20	13.40
L	19.60	19.90	20.20
L1	3.66	3.86	4.06
Q	5.35	5.55	5.75
T1	12.47	12.67	12.87
T2	8.14	8.34	8.54