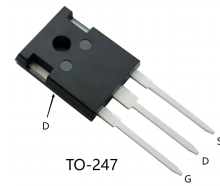


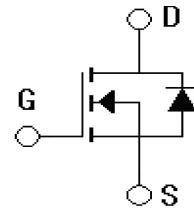
Features

- Low $R_{DS(on)}$
- Fast switching
- 100% avalanche tested
- Low package inductance
- Low intrinsic Rectifier
- High current handing diode



Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC chopper
- AC motor drives
- Uninterruptible power supplies
- Linear current regulators



Absolute Ratings ($T_C=25^\circ\text{C}$ 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 (Silicon limit)	I _D	T _C =25℃	420	A
		T _C =100℃	265	A
Drain Current -continuous (Package limit)	I _D	T _C =25℃	190	A
Drain Current - pulse (note 1) (Silicon limit)	I _{DM}		1680	A
Drain Current - pulse (note 1) (Package limit)	I _{DM}		760	A
Single Pulsed Avalanche Energy (note 2)	E _{AS}		1764	mJ
Avalanche Current(note 1)	I _{AR}		84	A
Power Dissipation	P _D	T _C =25℃	480	W
		T _C =100℃	192	W
Operating Temperature 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	100	-	-	V
Drain cut-off current	I _{DSS}	V _{DS} =100V, T _j =25℃	-	-	1	μA
		V _{DS} =100V, T _j =125℃	-	-	100	
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On-Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =50A (note 3)	-	1.62	2.00	mΩ
Forward Transconductance	g _{fs}	V _{DS} =20V , I _D =50A (note 3)	-	161.8	-	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	16.02	-	nF
Output capacitance	C _{oss}		-	5380	-	pF
Reverse transfer capacitance	C _{rss}		-	510	-	pF
Gate Resistance	R _g	F=1MHz	-	1.34	-	Ω
Switching Characteristics						
Turn-On delay time	t _{d(on)}	V _{DD} =50V, I _D =180A, R _G =2Ω, V _{GS} =10V	-	36.8	-	ns
Turn-On rise time	t _r		-	83	-	ns
Turn-Off delay time	T _{d(off)}		-	95	-	ns
Turn-Off Fall time	t _f		-	41	-	ns
Total Gate Charge	Q _g	V _{DS} =50V, I _D =50A, V _{GS} =10V(note4)	-	252.9	-	nC
Gate-Source charge	Q _{gs}		-	67.4	-	nC
Gate-Drain charge	Q _{gd}		-	65.2	-	nC
Drain-Source Diode Characteristics						
Source Voltage	V _{SD}	V _{GS} =0V, I _S =50A (note 3)	-	-	1.1	V
Continuous Source Current	I _S		-	-	420	A
Pulsed Source Current	I _{SM}		-	-	1680	A
Reverse recovery time	t _{rr}	V _{GS} =0V, I _F =50A dI _F /dt=100A/us	-	84.4	-	ns
Reverse recovery charge	Q _{rr}		-	213.6	-	nC
Reverse recovery current	I _{rrm}		-	4.29	-	A

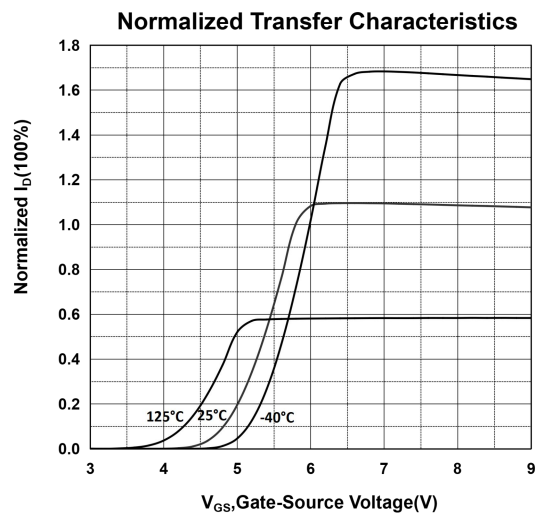
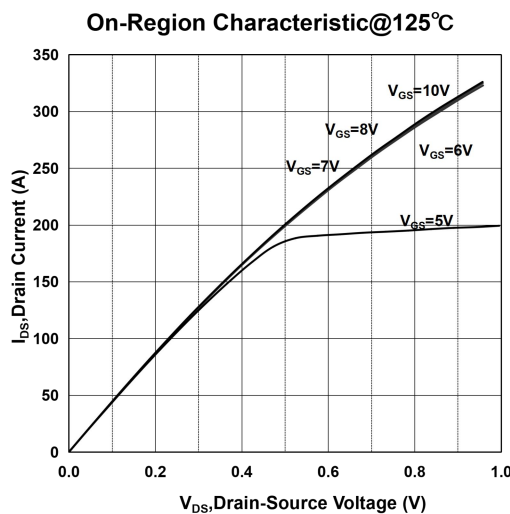
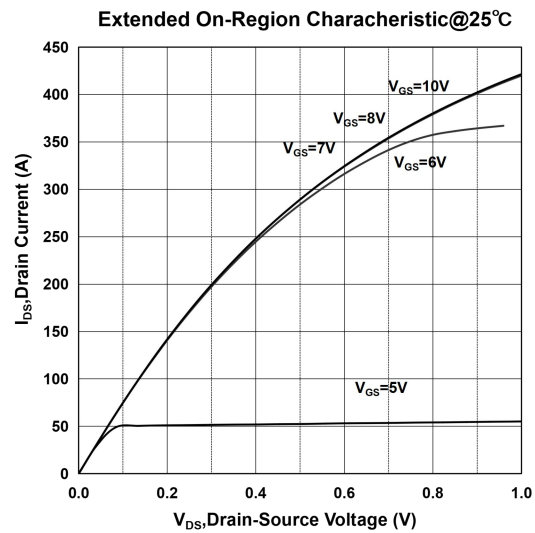
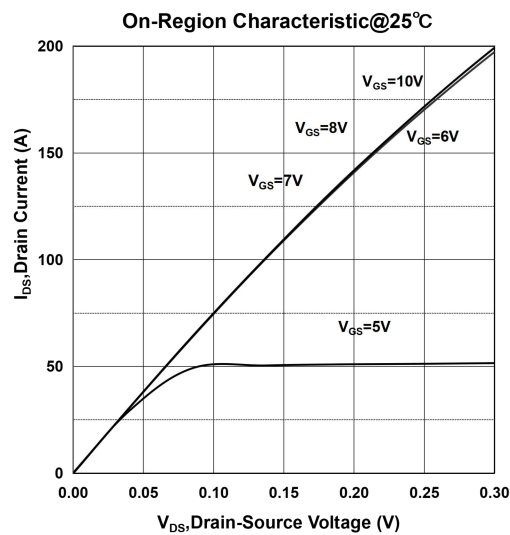
Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case,Max	$R_{\theta JC}$	0.26	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient,Max	$R_{\theta JA}$	62	$^{\circ}\text{C}/\text{W}$

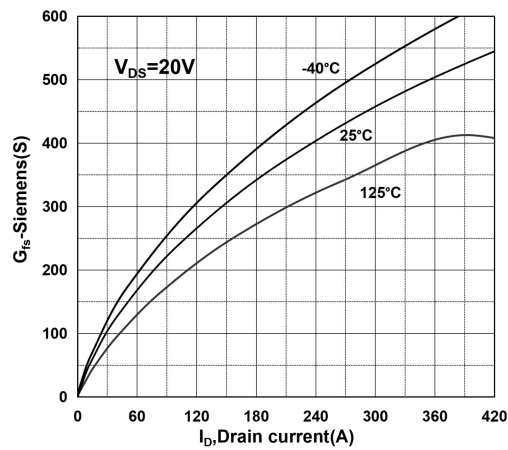
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: $L=0.5\text{mH}$, $I_{AS}=60\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$
- 3: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature

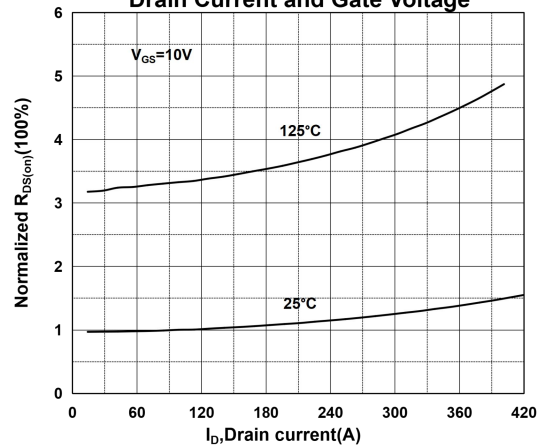
Electrical Characteristics



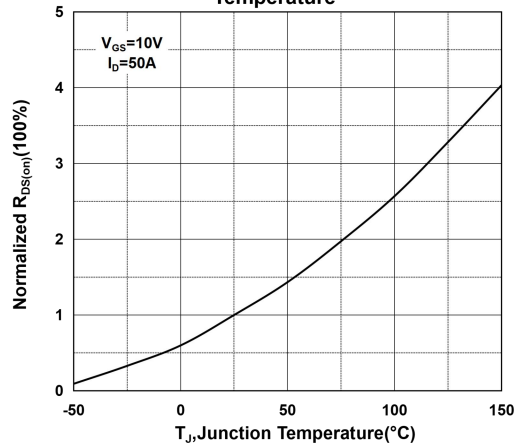
Transconductance



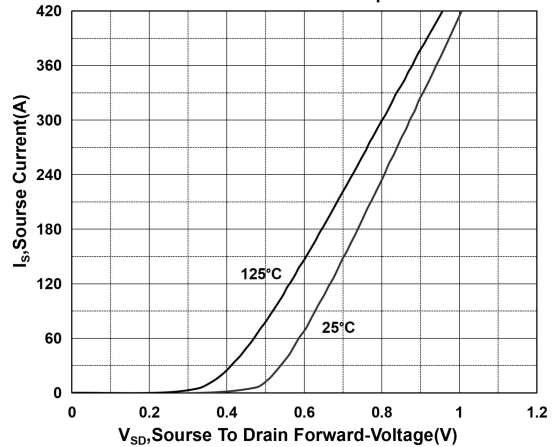
Normalized On-Resistance Variation vs Drain Current and Gate Voltage



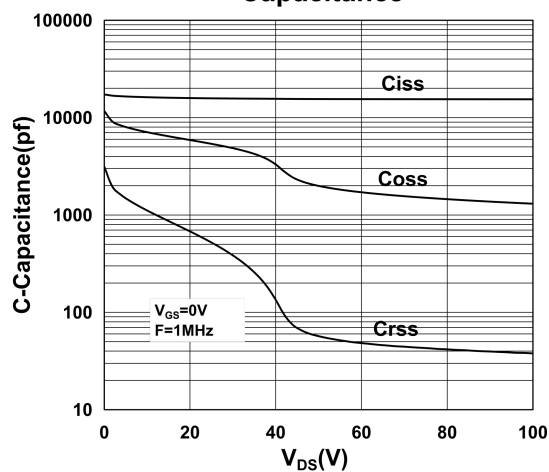
Normalized On-Resistance Variation vs Temperature



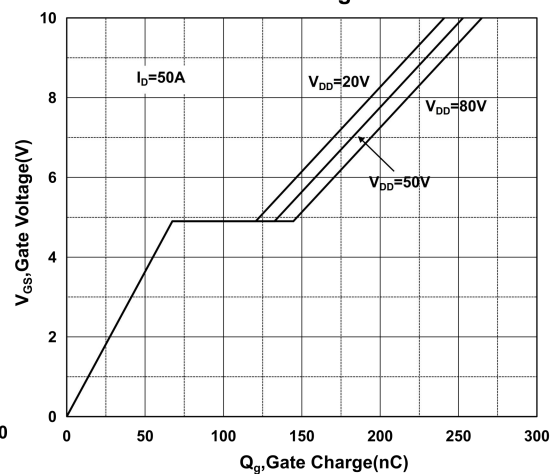
Body Diode Forward Voltage Variation with Source Current and Temperature



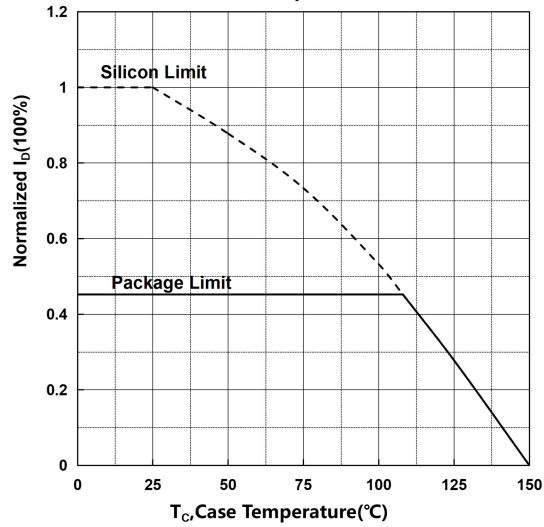
Capacitance



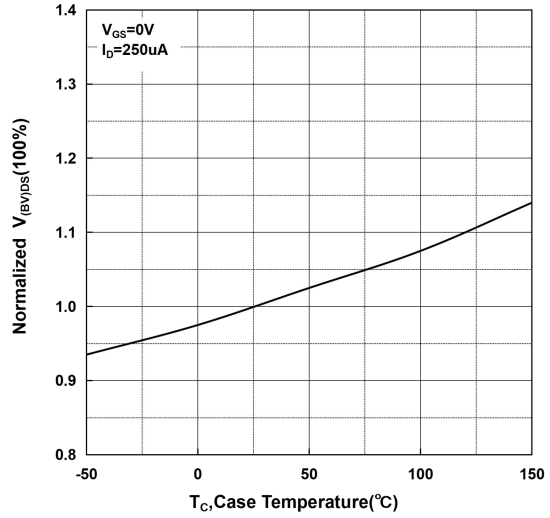
Gate Charge



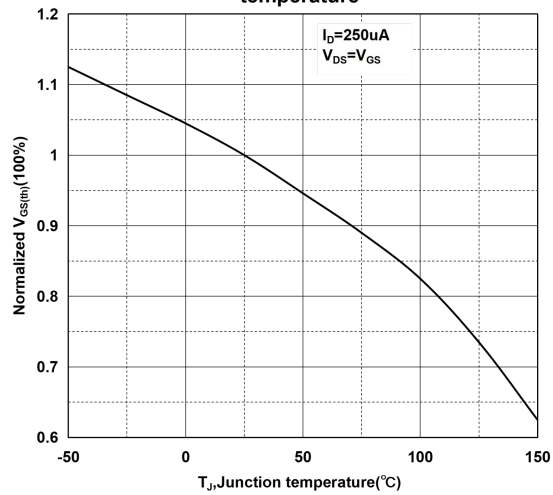
Normalized Maximum Drain Current vs Case Temperature



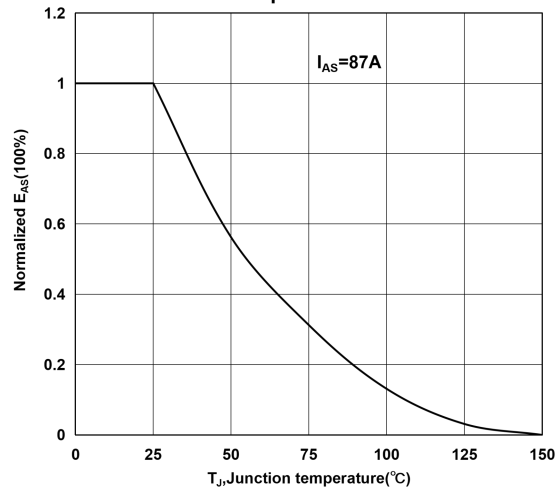
Normalized $V_{(BV)DS}$ vs temperature



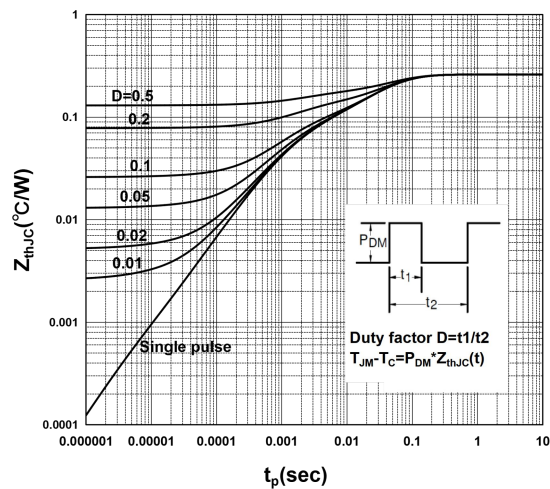
Normalized gate threshold voltage vs temperature



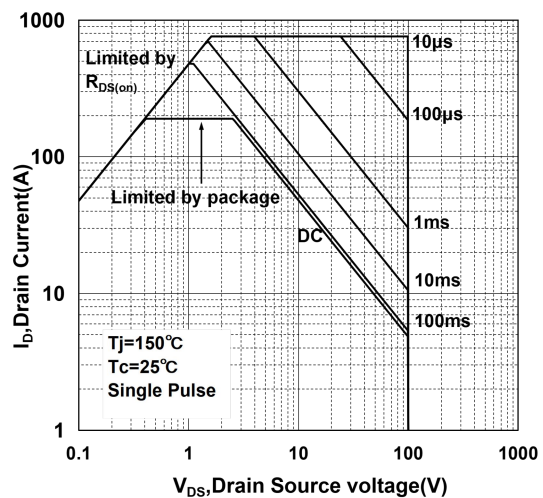
Normalized Maximum avalanche energy vs temperature



Transient Thermal Response Curve



Safe Operating Area



Package Mechanical DATA

