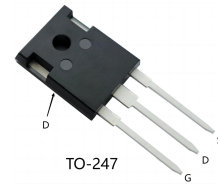


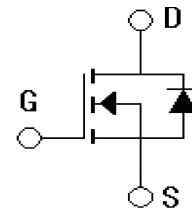
Features

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

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	T=25℃	350	A
		T=100℃	175	A
Drain Current - pulse (note 1)	I _{DM}		1400	A
Single Pulsed Avalanche Energy (note 2)	E _{AS}		2500	mJ
Avalanche Current(note 1)	I _{AR}		100	A
Peak Diode Recovery dv/dt(note 3)	dv/dt		20	V/ns
Power Dissipation	PD T _C =25℃		463	W
	-Derate above 25℃		3.08	W/℃
Operating Temperature and Storage Temperature Range	T _J ,T _{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T _L		300	℃

Electrical Characteristics($T_{CASE}=25^{\circ}C$ 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℃	-	-	500	
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	3	4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V,I _D =50A (note 4)	-	2.3	2.9	mΩ
Forward Transconductance	g _{fs}	V _{DS} =10V , I _D =50A (note 4)	-	9	-	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	47	-	nF
Output capacitance	C _{oss}		-	2700	-	pF
Reverse transfer capacitance	C _{rss}		-	630	-	pF
Switching Characteristics						
Turn-On delay time	t _{d(on)}	V _{DD} =35V,I _D =175A, R _G =5Ω, V _{GS} =10V	-	90	-	ns
Turn-On rise time	t _r		-	185	-	ns
Turn-Off delay time	T _{d(off)}		-	170	-	ns
Turn-Off Fall time	t _f		-	240	-	ns
Total Gate Charge	Q _g	V _{DS} =50V,I _D =175A, V _{GS} =10V(note5)	-	650	-	nC
Gate-Source charge	Q _{gs}		-	112	-	nC
Gate-Drain charge	Q _{gd}		-	206	-	nC
Drain-Source Diode Characteristics						
Drain-Source Voltage	V _{SD}	V _{GS} =0V,I _S =10A (note 4)	-	0.76	1.2	V
Continuous Drain-Source Current	I _S		-	-	350	A
Pulsed Drain-Source Current	I _{SM}		-	-	1320	A
Reverse recovery time	t _{rr}	V _{GS} =0V,I _F =50A dI _F /dt=100A/us	-	95	-	ns
Reverse recovery charge	Q _{rr}		-	1.23	-	uC

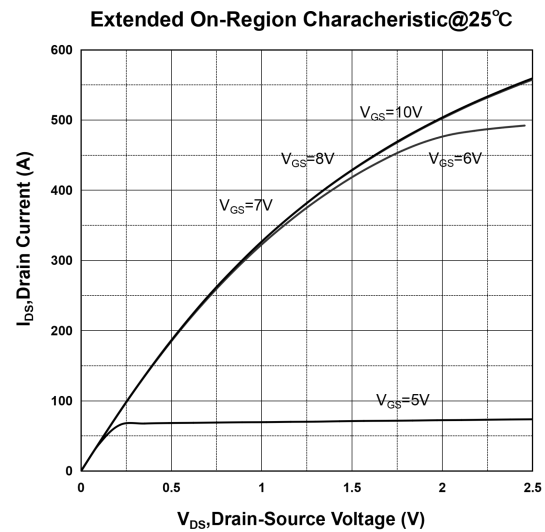
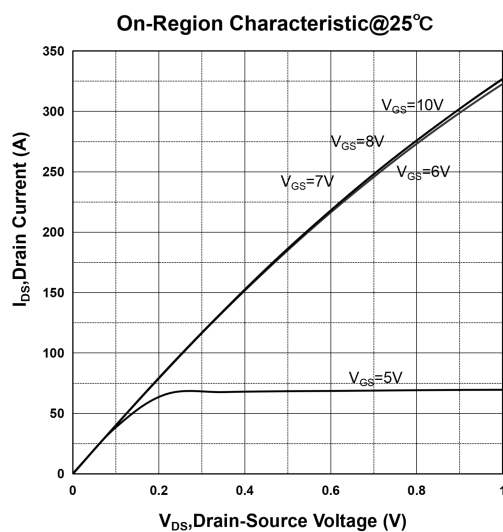
Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case,Max	$R_{\theta JC}$	0.27	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient,Max	$R_{\theta JA}$	62.5	$^{\circ}\text{C}/\text{W}$

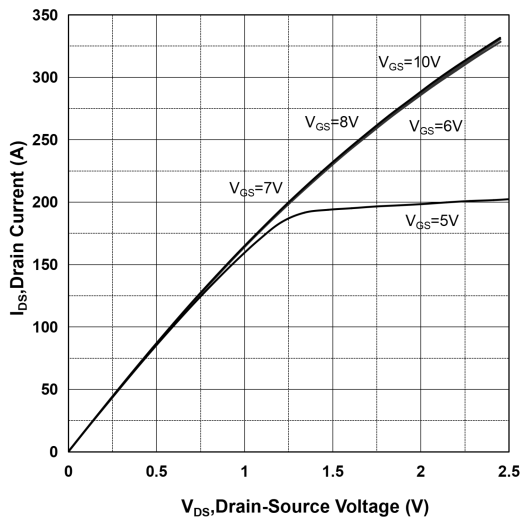
Notes:

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

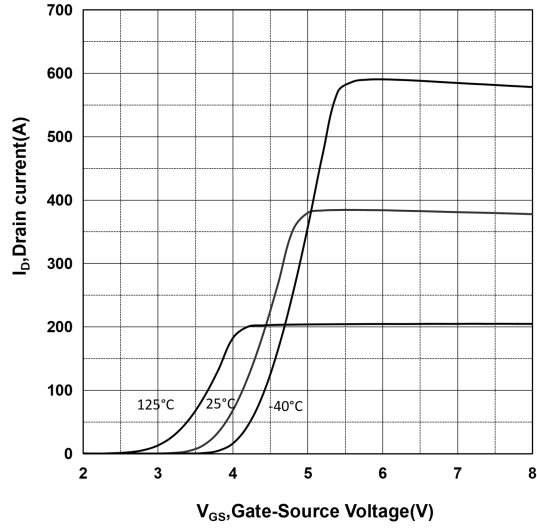
Electrical Characteristics



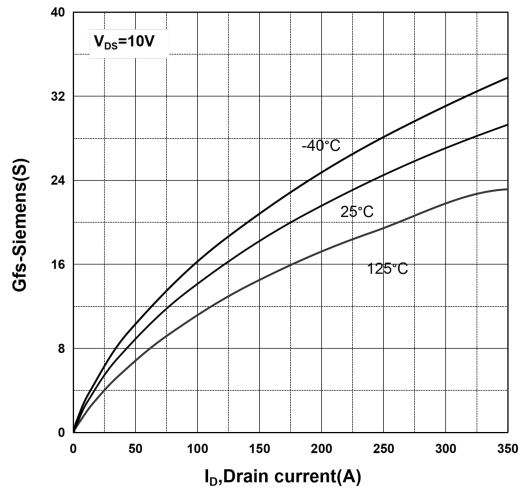
On-Region Characteristic@125°C



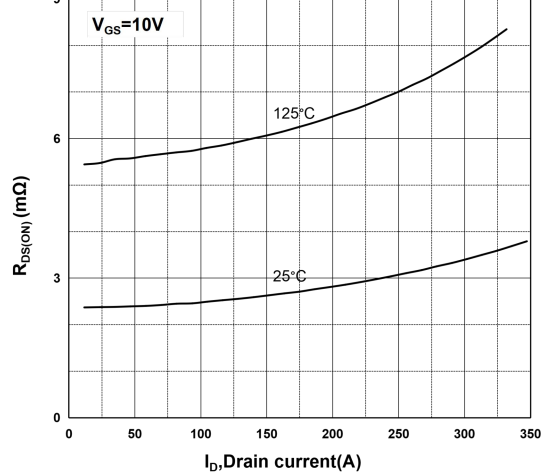
Transfer Characteristics



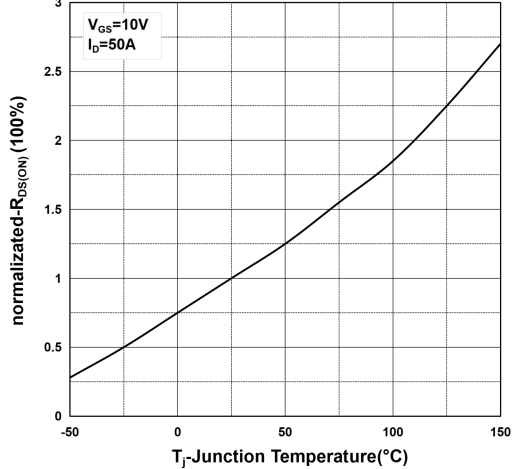
Transconductance



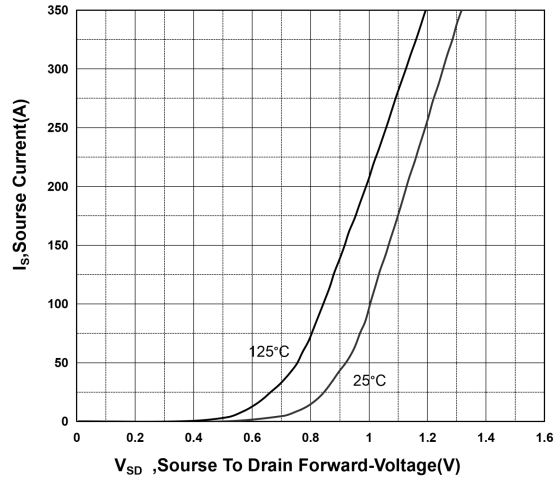
On-Resistance Variation vs Drain Current and Gate Voltage



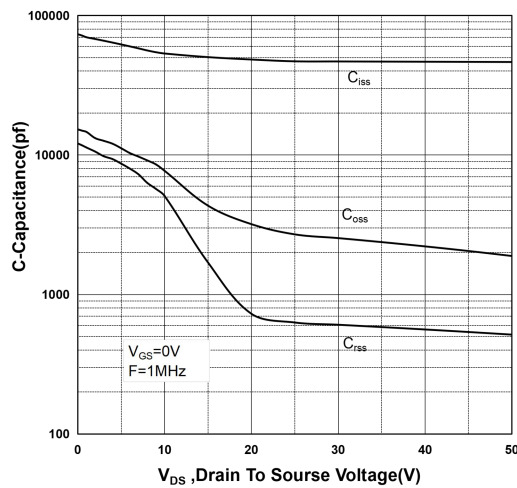
Normalized On-Resistance Variation vs Junction Temperature



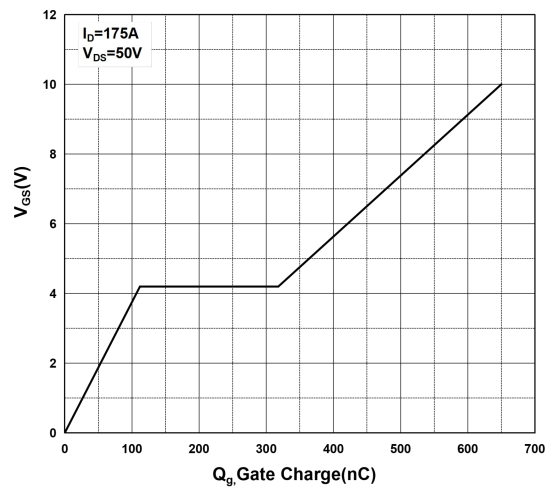
Body Diode Forward Voltage Variation with Source Current and Temperature



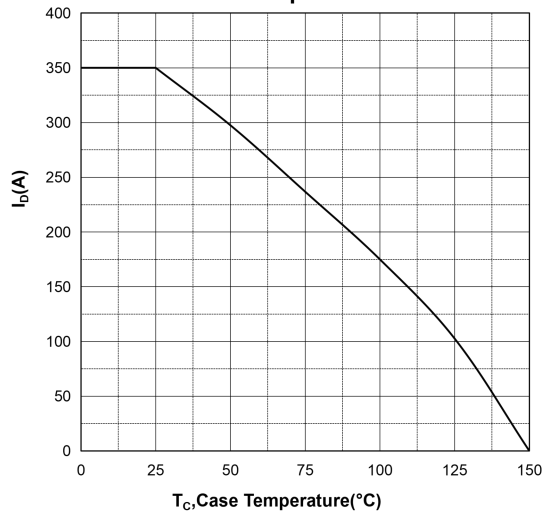
Capacitance



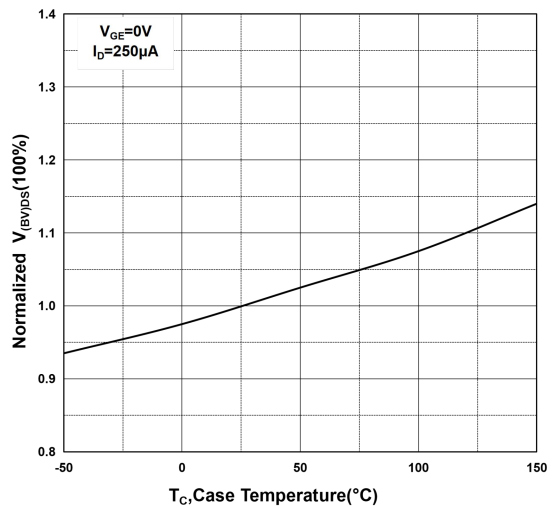
Gate Charge



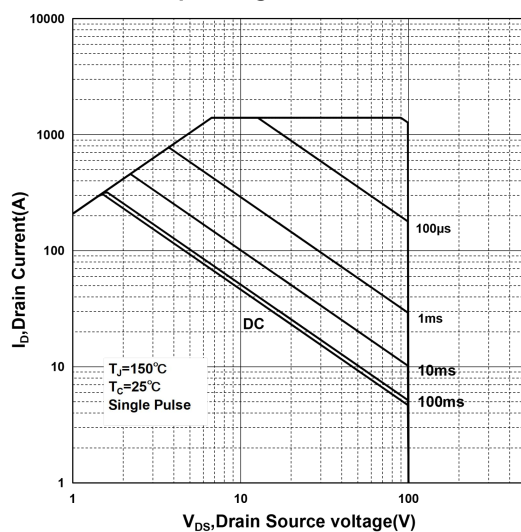
Maximum Drain Current vs Case Temperature



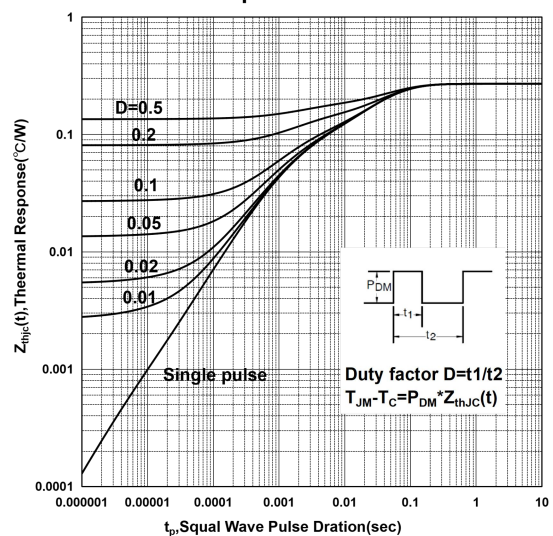
Normalized $V_{(BV)DS}$ vs temperature



Safe Operating Area for TO-247



Transient response Curve for TO-247



Package Mechanical DATA

