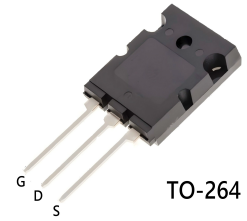


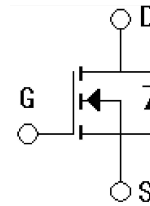
Features

- $V_{DS}=250V, I_D=180A$
 $R_{DS(on)(type)}=13.5m\Omega @ V_{GS}=10V$
- High density cell design for ultra low $R_{DS(on)}$
- Low gate charge
- Improved dv/dt capability
- RoHS product



Applications

- Power switching application
- Isolated DC/DC converters in Telecom and Industrial
- Synchronous Rectification in DC/DC Converters



Absolute Ratings ($T_c=25^\circ C$, Unless otherwise specified)

Parameter	Symbol		Limit	Unit
Drain-Source Voltage	V _{DSS}		250	V
Gate-Source Voltage	V _{GSS}		±20	V
Drain Current-continuous	I _D	T _C =25℃	180	A
		T _C =100℃	108	A
Drain Current-pulse ¹	I _{DM}		720	A
Single Pulsed Avalanche Energy ²	E _{AS}		5	J
Maximum Power Dissipation	P _D	T _C =25℃	625	W
		T _C =100℃	375	W
Operating and Storage Temperature Range	T _J , T _{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering	T _L		300	℃

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

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	250	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}, V_{GS}=0V$	-	-	10	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V

Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=35A$ (note 3)	-	13.5	18.0	mΩ
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=40A$ (note 3)	80	-	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	22150	-	pF
Output capacitance	C_{oss}		-	2263	-	pF
Reverse transfer capacitance	C_{rss}		-	58	-	pF

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	t _{d(on)}	V _{DS} =125V,I _D =90A, R _G =1Ω V _{GS} =15V(note 4,5)	-	38	-	ns
Turn-On rise time	t _r		-	58	-	ns
Turn-Off delay time	t _{d(off)}		-	96	-	ns
Turn-Off rise time	t _f		-	26	-	ns
Total Gate Charge	Q _g	V _{DS} =125V,I _D =90A, V _{GS} =10V (note 4,5)	-	386	-	nC
Gate-Source charge	Q _{gs}		-	146	-	nC
Gate-Drain charge	Q _{gd}		-	68	-	nC
Drain-Source Diode Characteristics						
Continuous Drain-Source Diode Forward Current	V _{SD}	V _{GS} =0V,I _S =70A (note 3)	-	0.90	1.5	V
Diode Forward Current	I _S	T _C =25°C	-	-	180	A
Pulsed Source Current	I _{SM}				720	A
Reverse recovery time	t _{rr}	I _S =90A,dI _S /dt=100A/μs	-	-	200	ns
Reverse recovery charge	Q _{rr}	V _{DD} =75V(note 3)	-	884	-	nC

Thermal Characteristics

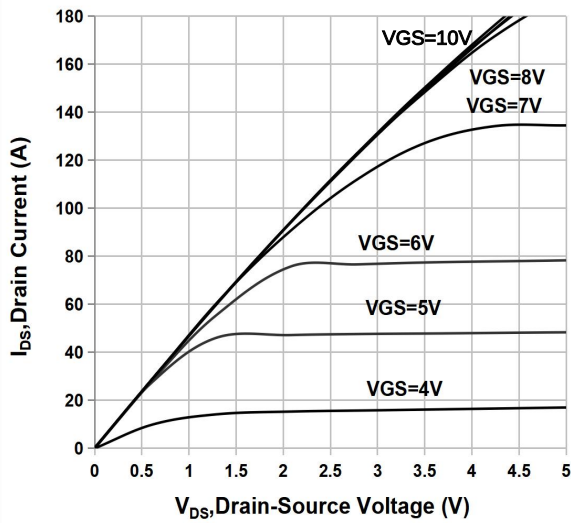
Parameter	Symbol	Value	Unit
Thermal Resistance, junction to Case	$R_{th(J-C)}$	0.20	$^{\circ}C/W$
Thermal Resistance, Junction to ambient	$R_{th(J-A)}$	50	$^{\circ}C/W$

Notes:

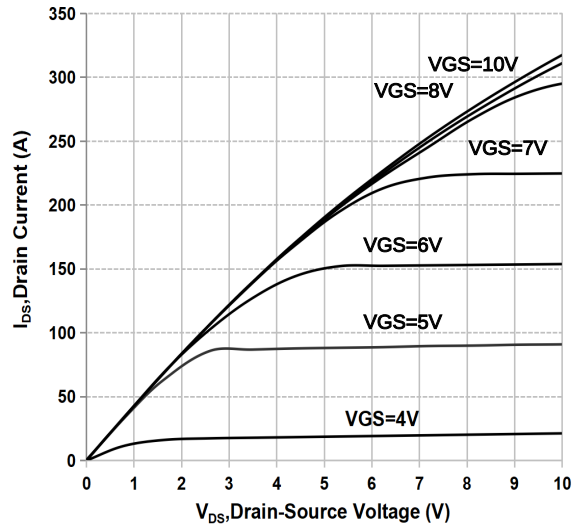
- 1: Pulse width limited by maximum junction temperature
- 2: $L=0.5\text{mH}$, $I_{AS}=I_{AR}$, $V_{DD}=50\text{V}$, $R_G=25\ \Omega$, Starting $T_J=25^\circ\text{C}$
- 3: $I_{SD}\leq 100\text{A}$, $di/dt\leq 300\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$
- 4: Pulse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

Electrical Characteristics

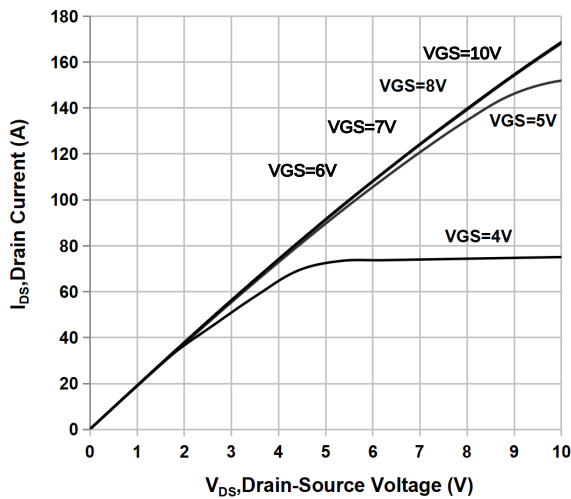
On-Region Characteristic@25°C



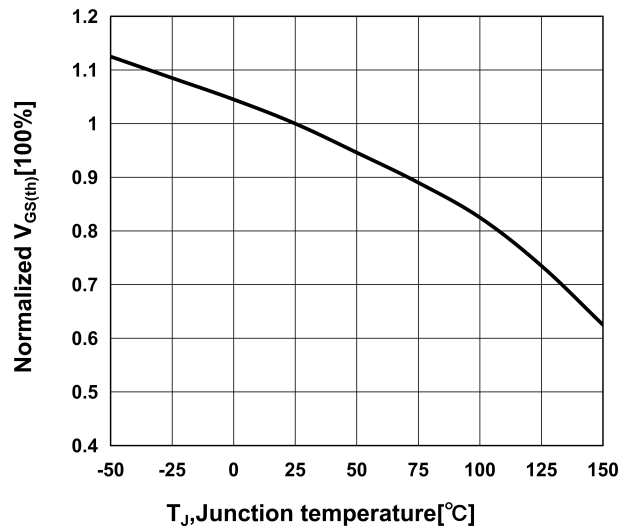
Extended On-Region Characteristic@25°C



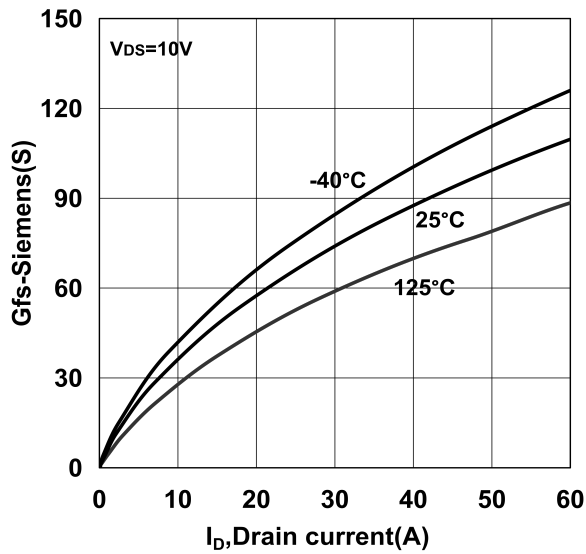
On-Region Characteristic@125°C



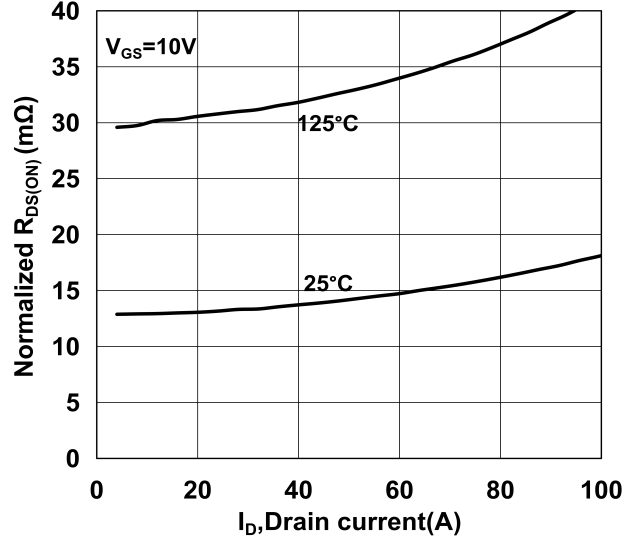
Normalized gate threshold voltage vs temperature



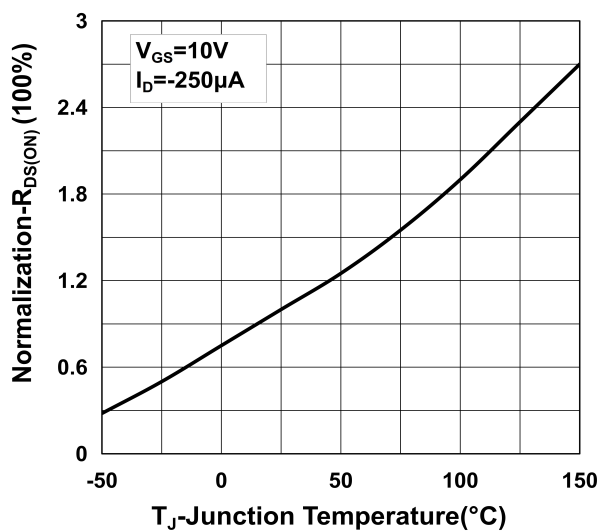
Transconductance



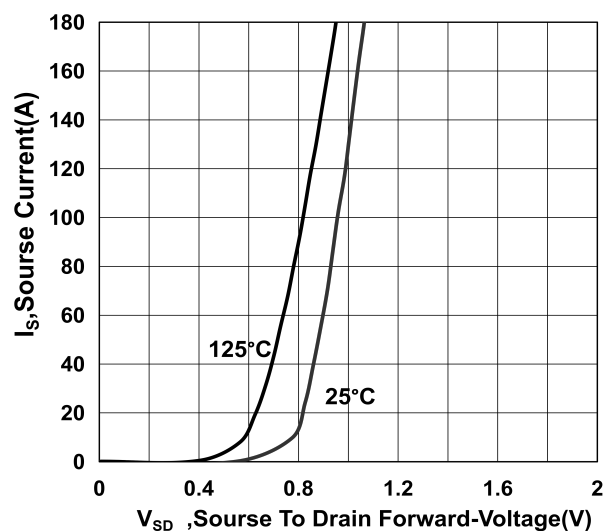
Normalized On-Resistance Variation vs Drain Current and Gate Voltage



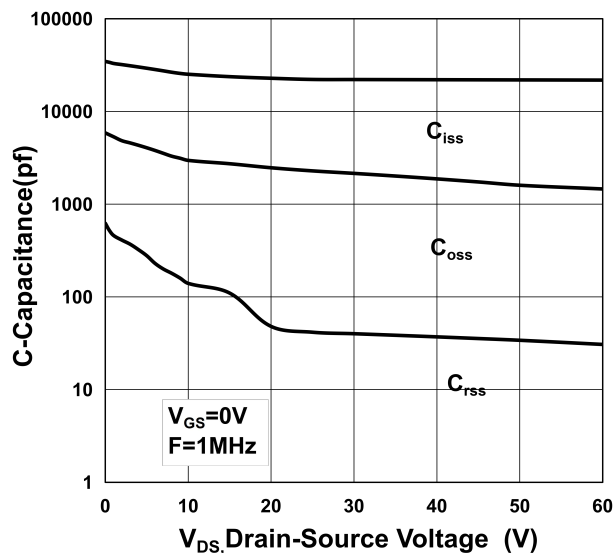
Normalization On-Resistance Variation vs Junction Temperature



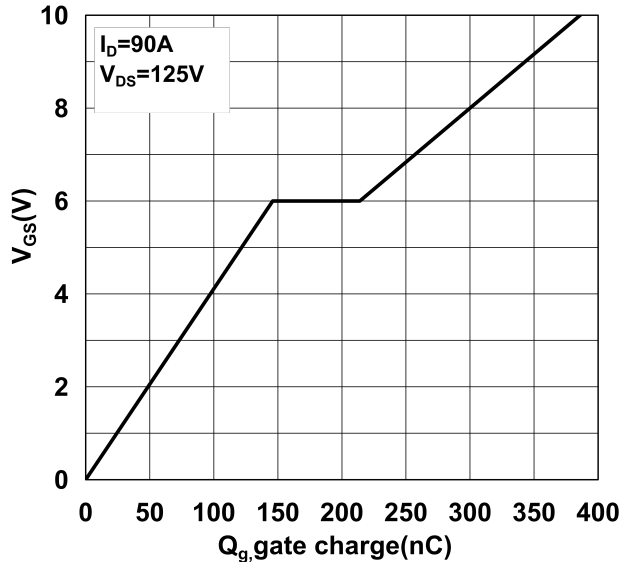
Body Diode Forward Voltage Variation with Source Current and Temperature



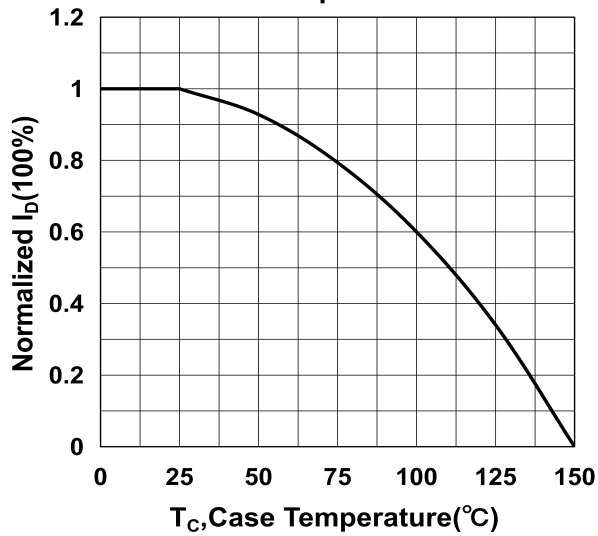
Capacitance



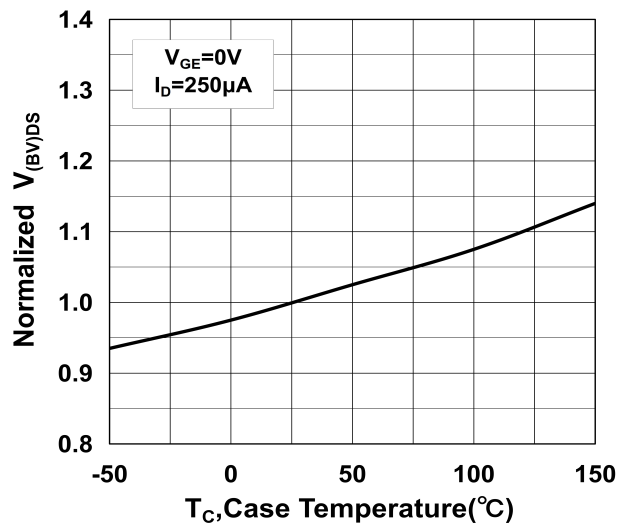
Gate Charge



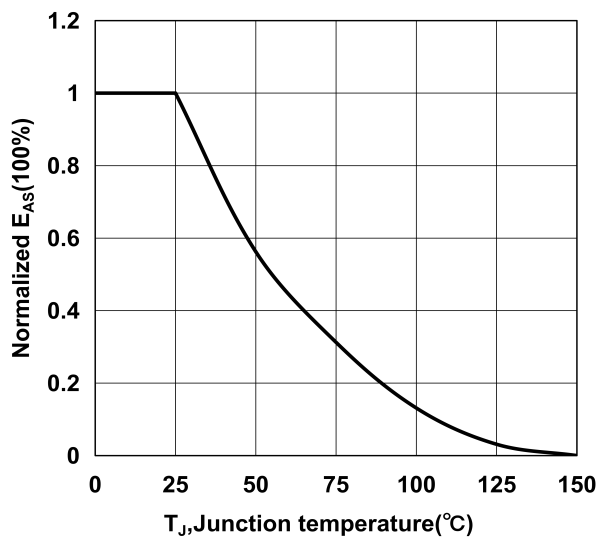
Maximum Drain Current vs Case Temperature



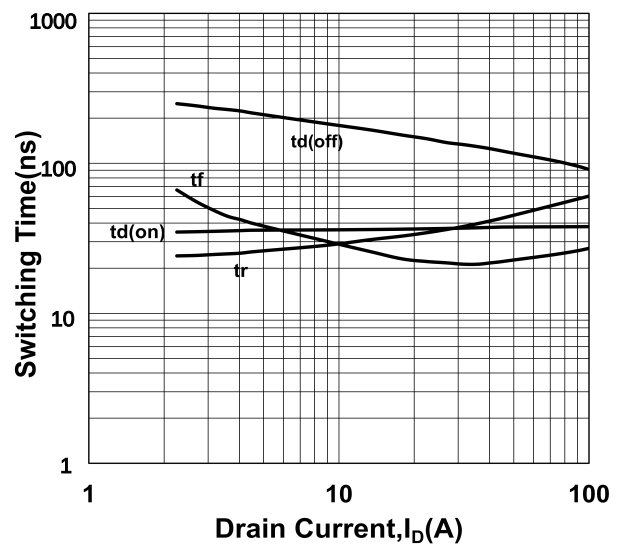
Normalized $V_{(BV)DS}$ vs temperature



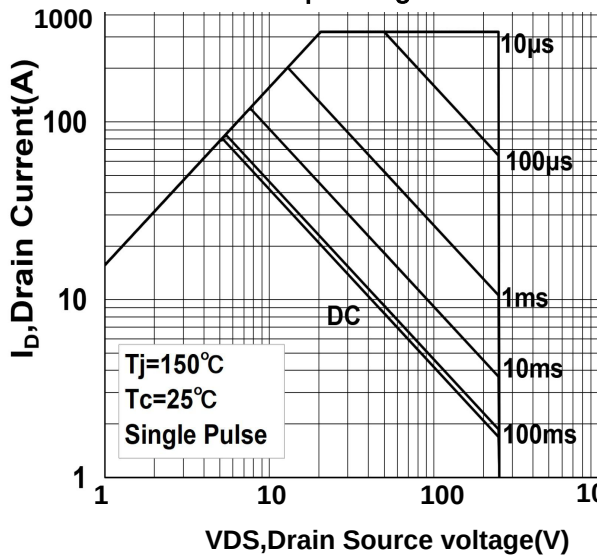
Normalized maximum avalanche energy vs temperature



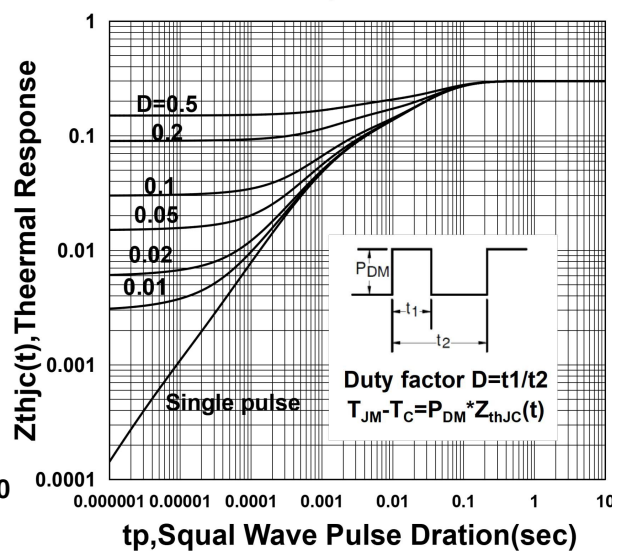
Switching Characteristics



Safe Operating Area



Transient response Curve



Package Mechanical DATA

