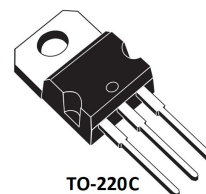


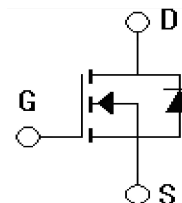
Features

- $V_{DS}=30V, I_D=160A$
 $R_{DS(on)} < 3m\Omega @ V_{GS}=10V$
- High density cell design for ultra low R_{dson}
- 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 ($T_C=25^\circ C$)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current-continuous	I_D	160	A
Drain Current-continuous ($T_C=100^\circ C$)	$I_D(T_C=100^\circ C)$	128	A
Drain Current-pulse (note 1)	I_{DM}	640	A
Single Pulsed Avalanche Energy (note 2)	E_{AS}	277	mJ
Maximum Power Dissipation	PD $T_C=25^\circ C$ Derate above $25^\circ C$	119	W
		0.95	W/ $^\circ C$
Operating and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	2.3	3	m Ω
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=20A$ (note 4)	-	42.6	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$	-	9300	-	pF
Output capacitance	C_{oss}		-	904	-	pF
Reverse transfer capacitance	C_{rss}		-	813	-	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 _{DD} =20V, I _D =-30A, R _G =3Ω V _{GS} =10V (note 4,5)	-	27	-	ns
Turn-On rise time	t _r		-	25	-	ns
Turn-Off delay time	t _{d(Off)}		-	90	-	ns
Turn-Off rise time	t _f		-	40	-	ns
Total Gate Charge	Q _g	V _{DS} =15V, I _D =30A, V _{GS} =10V (note 4,5)	-	160	-	nC
Gate-Source charge	Q _{gs}		-	18	-	nC
Gate-Drain charge	Q _{gd}		-	34	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A	-	0.82	1.2	V
Diode Forward Current	I _S	T _C =25°C	-	-	160	A
Reverse recovery time	t _{rr}	I _S =30A, di _F /dt=100A/μs	-	43	-	ns
Reverse recovery charge	Q _{rr}		-	40	-	nC

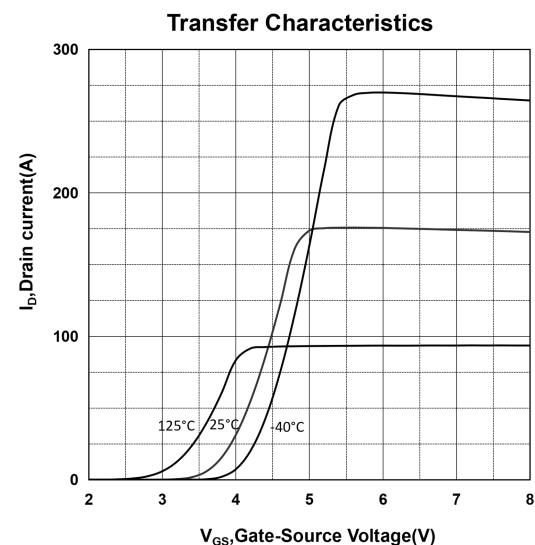
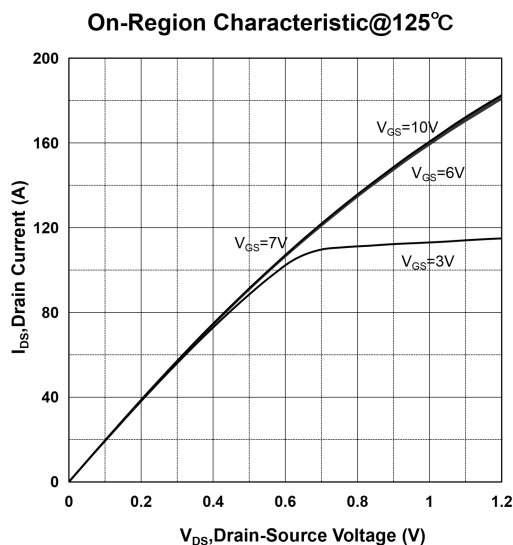
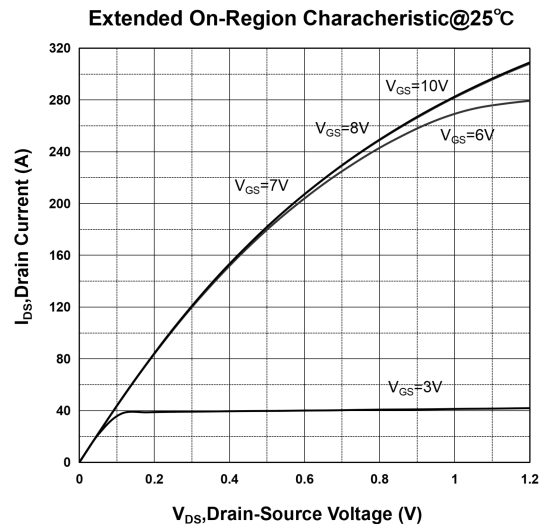
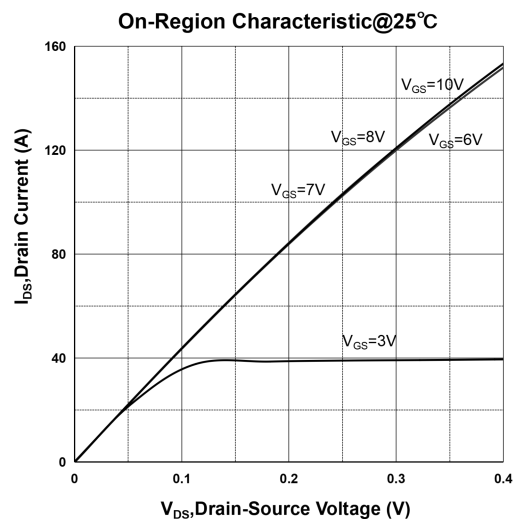
Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, junction to Case	$R_{th(j-C)}$	1.05	$^{\circ}C/W$
Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	60	$^{\circ}C/W$

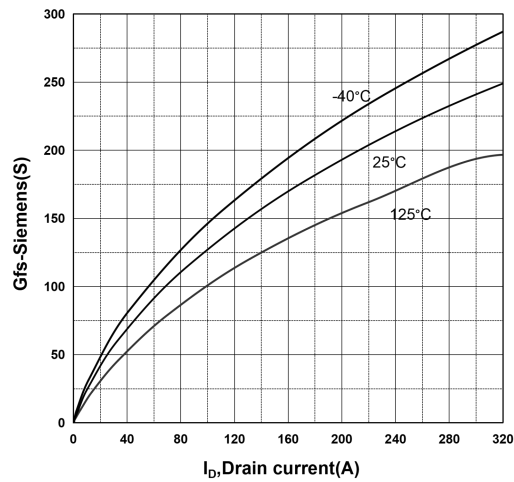
Notes:

1. Pulse width limited by maximum junction temperature
2. $I_{AS}=43A$, $V_{DD}=30V$, $R_G=25\ \Omega$, Starting $T_J=25^{\circ}C$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
4. Essentially independent of operating temperature

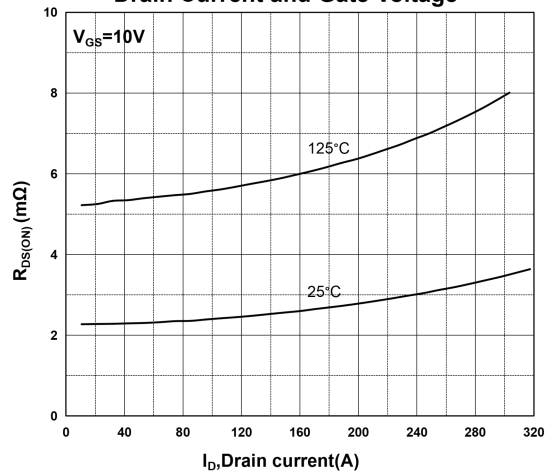
Electrical Characteristics



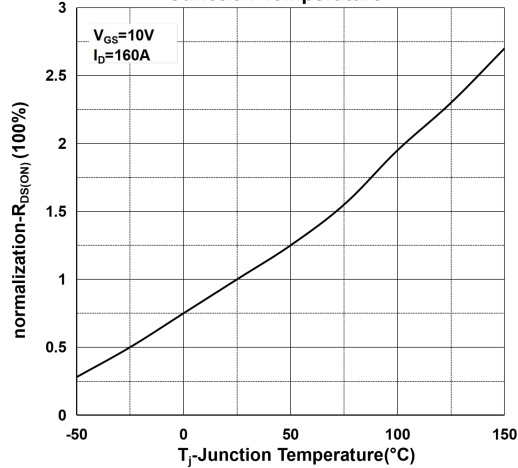
Transconductance



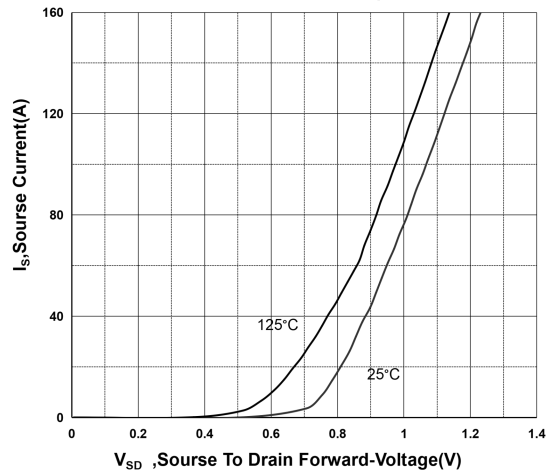
On-Resistance Variation vs Drain Current and Gate Voltage



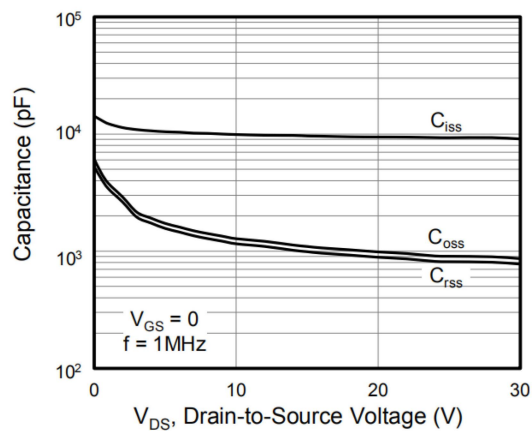
Normalization On-Resistance Variation vs Junction Temperature



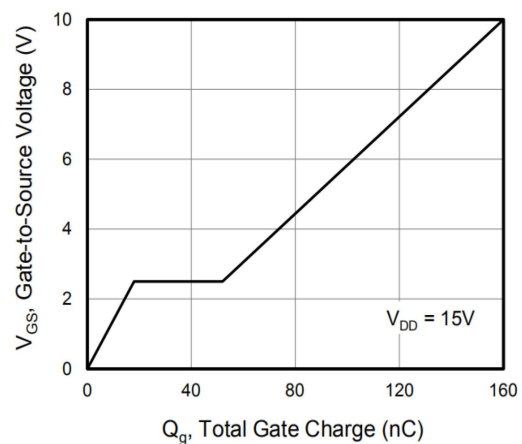
Body Diode Forward Voltage Variation with Source Current and Temperature



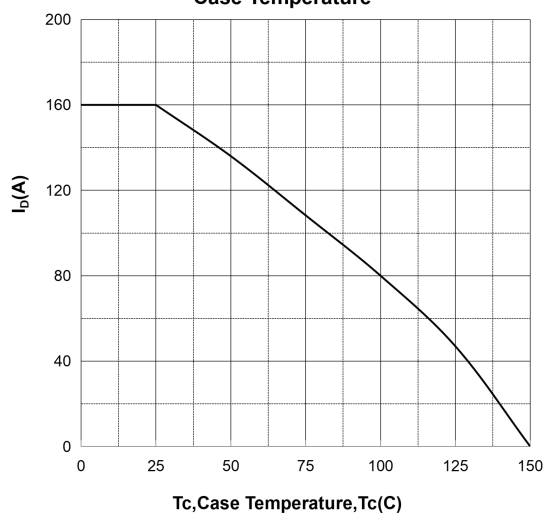
Capacitance Characteristics



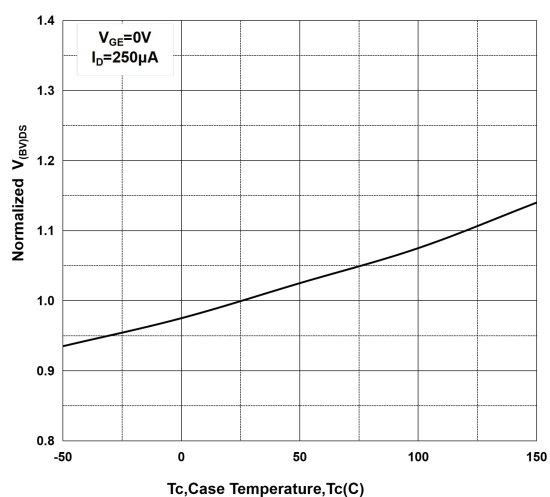
Gate Charge Characteristics



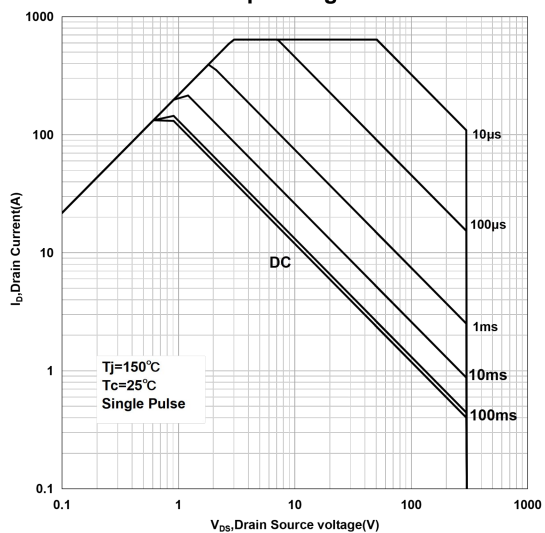
Maximum Drain Current vs Case Temperature



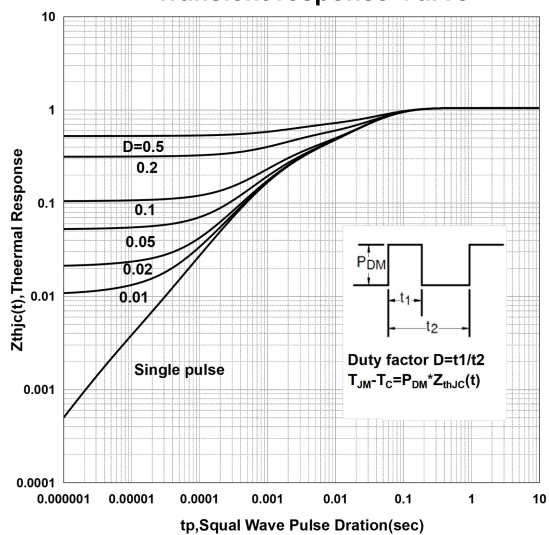
Normalized $V_{(BV)DS}$ vs temperature



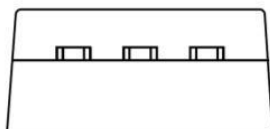
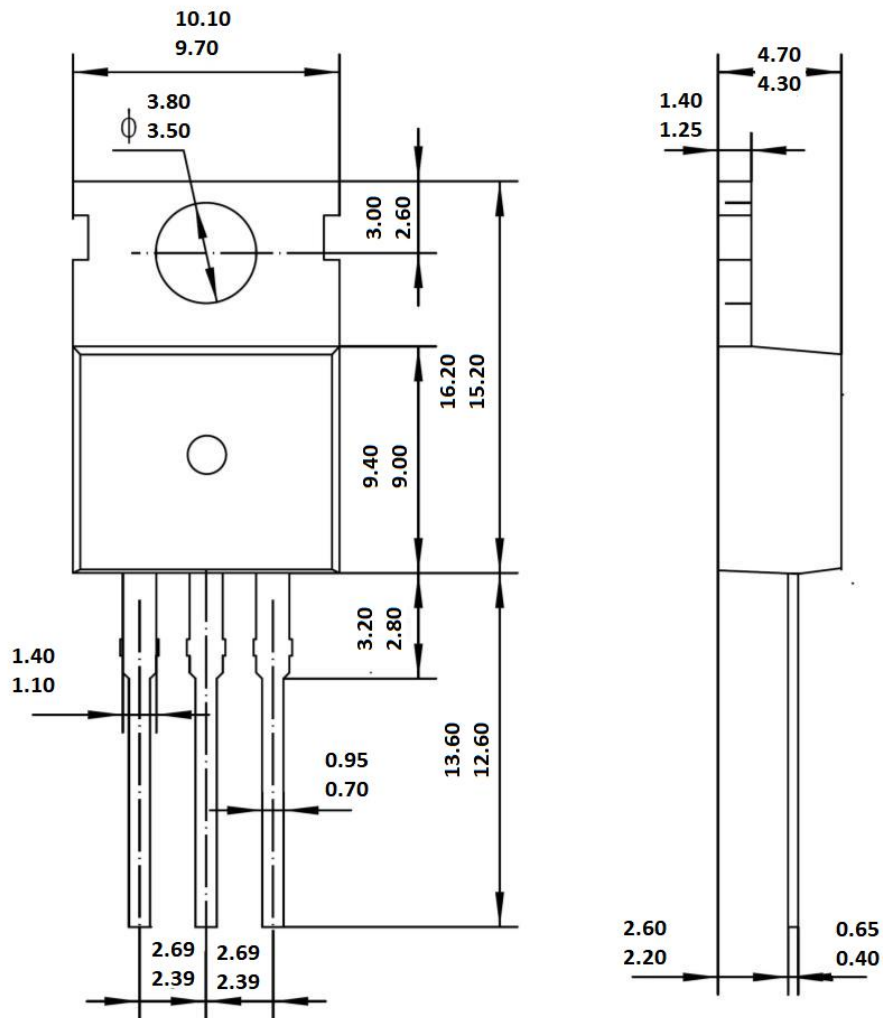
Safe Operating Area



Transient response Curve



Package Mechanical DATA



TO-220C

Unit: mm