

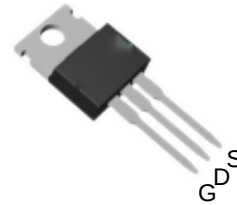
Features

- 30V/180A,
 $R_{DS(ON)} = 1.7\text{m}\Omega(\text{typ.}) @ V_{GS}=10\text{V}$
 $R_{DS(ON)} = 2.6\text{m}\Omega(\text{typ.}) @ V_{GS}=4.5\text{V}$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

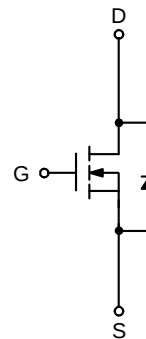
Applications

- Power Management in Secondary Rectifier
For SMPS.

Pin Description



Top View of TO-220



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		30	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _C =25°C	180	A
I _{DP} ^b	Pulse Drain Current Tested	T _C =25°C	540	A
I _D	Continuous Drain Current	T _C =25°C	180	A
		T _C =100°C	72	
P _D	Maximum Power Dissipation	T _C =25°C	100	W
		T _C =100°C	40	
R _{θJC}	Thermal Resistance-Junction to Case		1.2	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		62.5	
E _{AS} ^c	Avalanche Energy, Single Pulsed	L=0.1mH	246	mJ

Note a : Max. continuous current is limited by bonding wire. Silicon limited current is 125A base on max. junction temperature.

Note b : Pulse width limited by max. junction temperature.

Note c : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

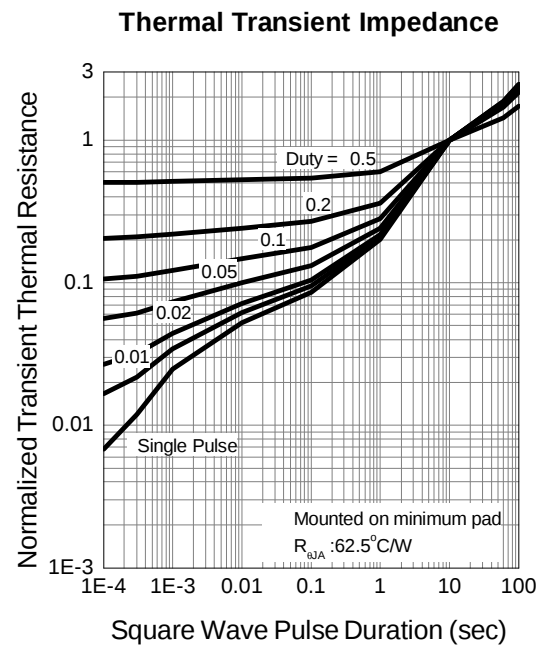
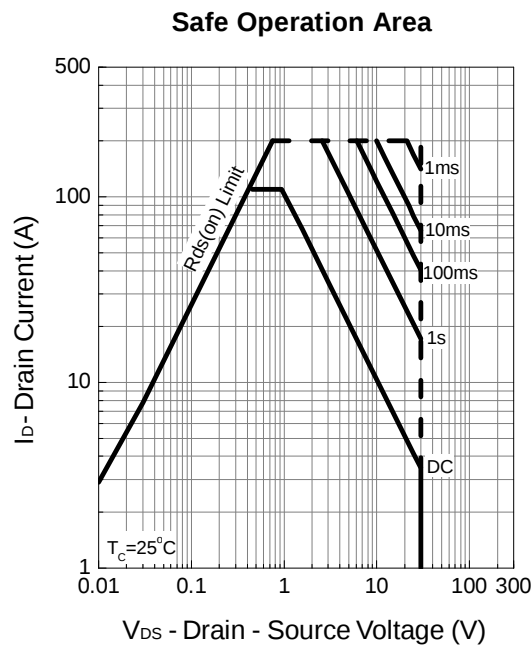
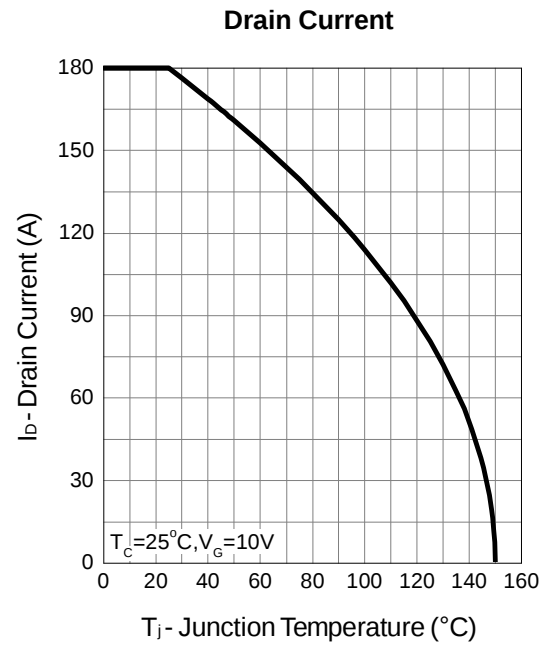
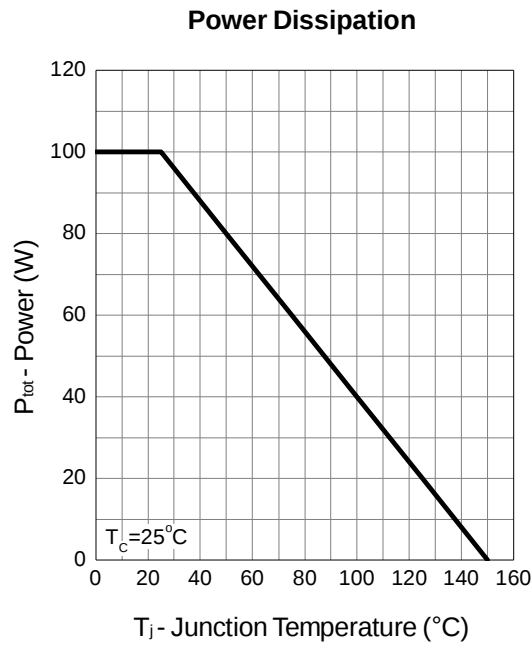
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V T _J =85°C	- -	- -	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.3	-	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =40A V _{GS} =4.5V, I _{DS} =32A	- -	1.7 2.6	2.5 3.5	mΩ
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =32A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs	-	27	-	ns
Q _{rr}	Reverse Recovery Charge		-	15	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.4	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	5850	-	pF
C _{oss}	Output Capacitance		-	720	-	
C _{rss}	Reverse Transfer Capacitance		-	520	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	20	37	ns
t _r	Turn-on Rise Time		-	16	30	
t _{d(OFF)}	Turn-off Delay Time		-	48	87	
t _f	Turn-off Fall Time		-	21	39	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =40A	-	43	-	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =40A	-	25	-	
Q _{gs}	Gate-Source Charge		-	7.3	-	
Q _{gd}	Gate-Drain Charge		-	12.3	-	

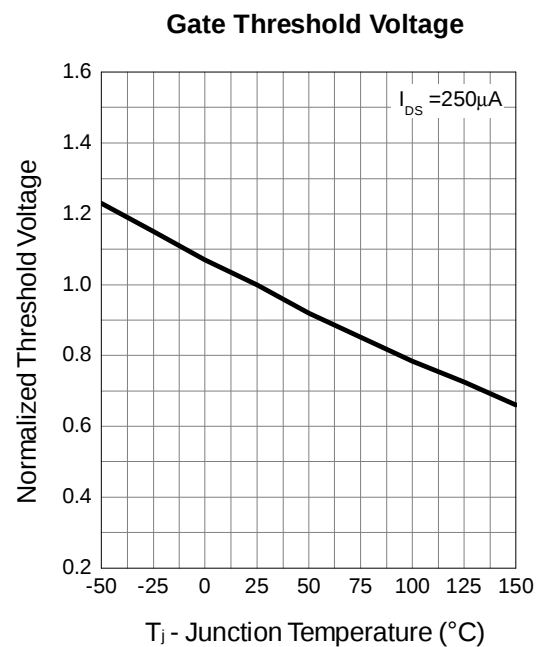
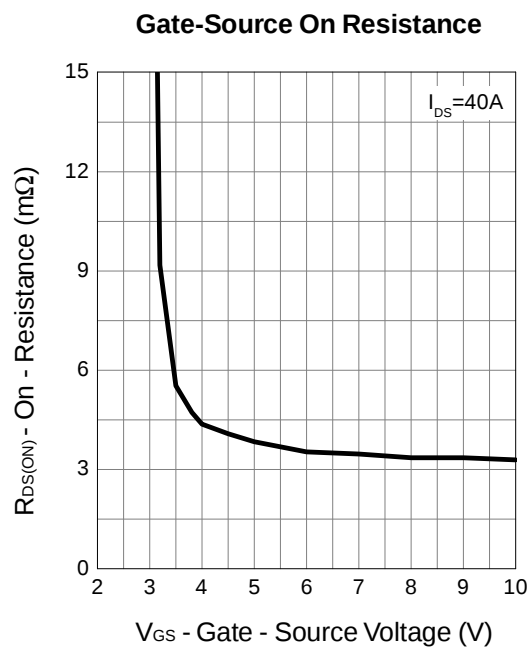
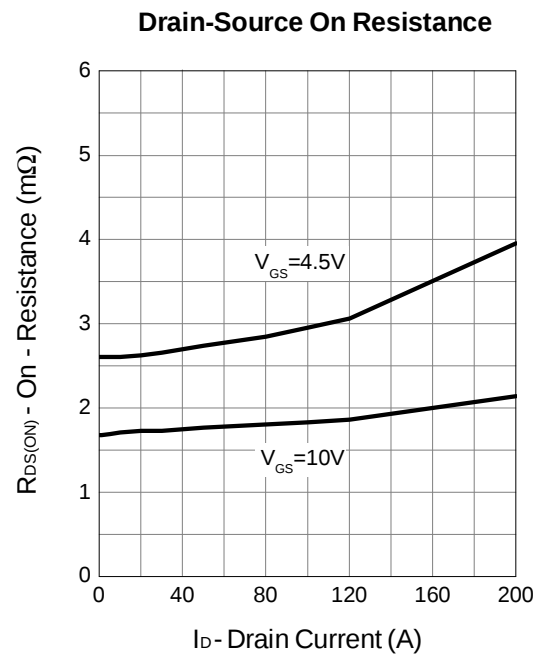
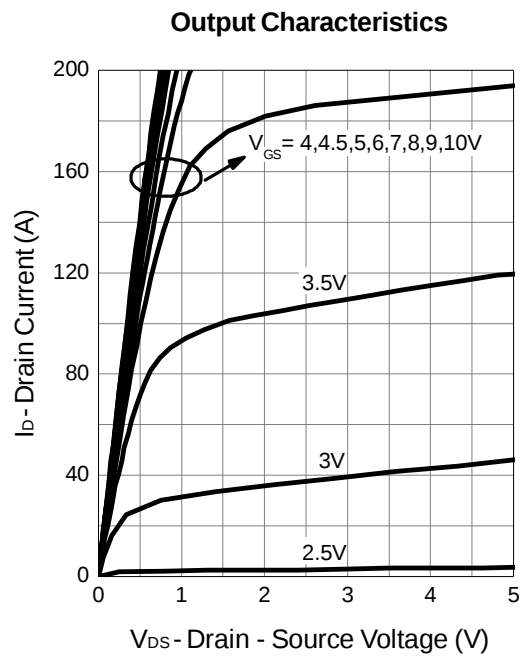
Note d : Pulse test ; pulse width≤300μs, duty cycle≤2%.

Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

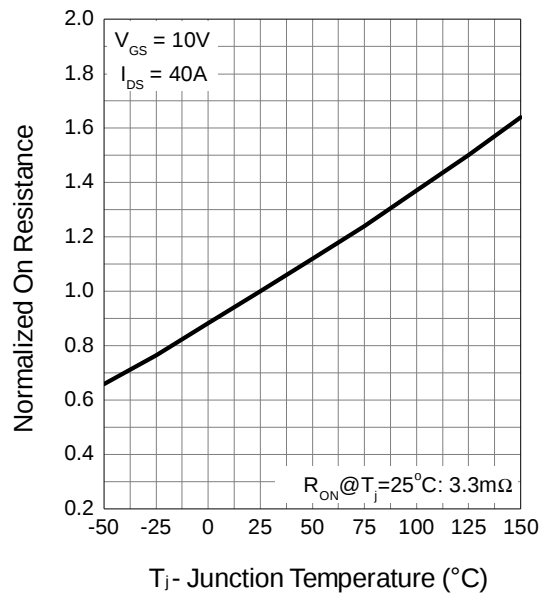


Typical Operating Characteristics (Cont.)

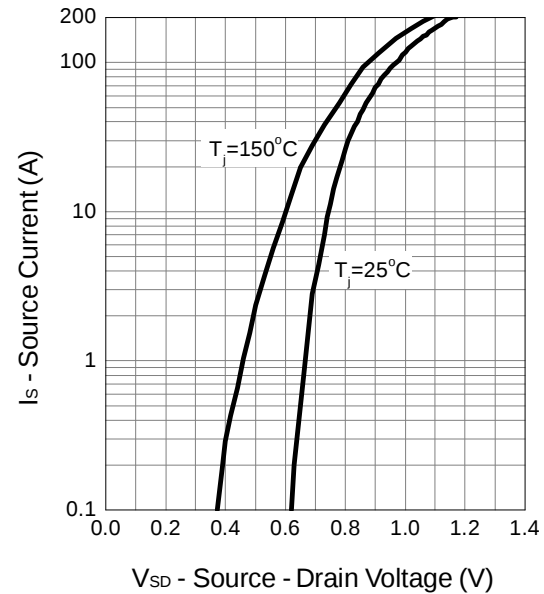


Typical Operating Characteristics (Cont.)

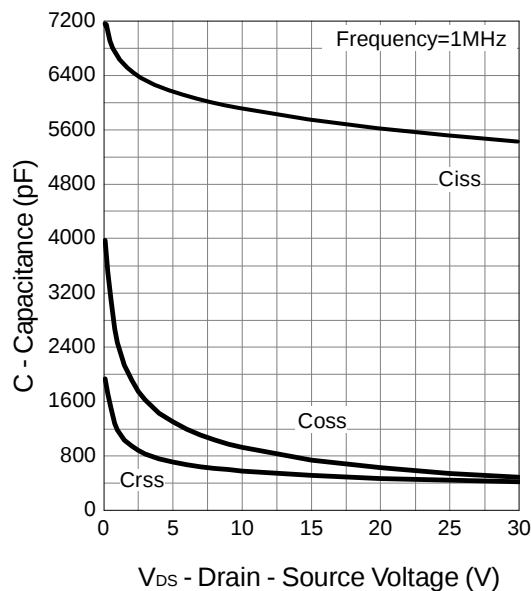
Drain-Source On Resistance



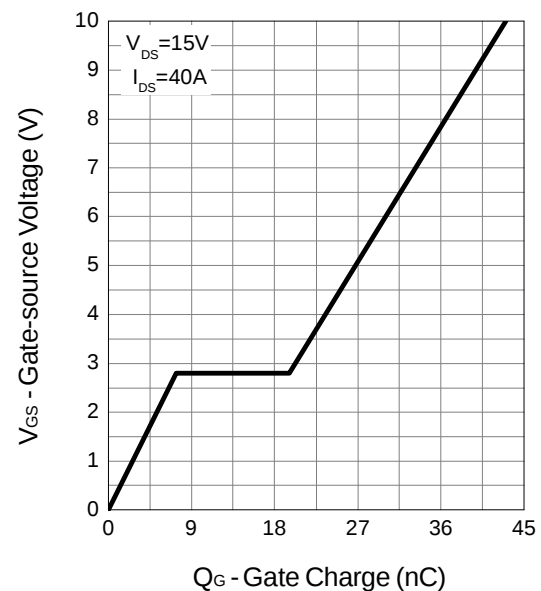
Source-Drain Diode Forward



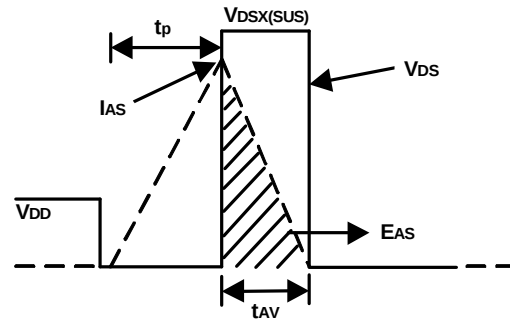
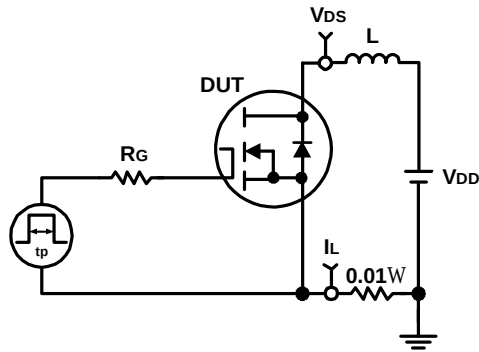
Capacitance



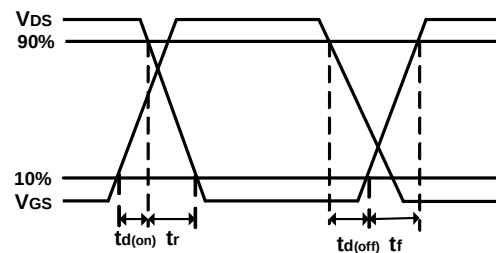
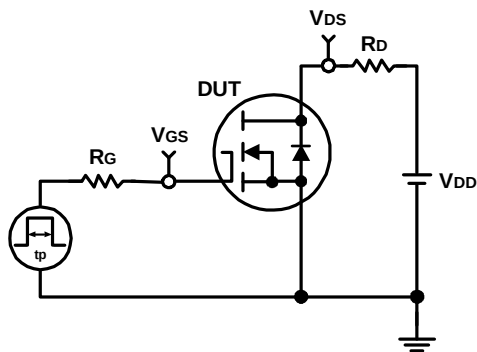
Gate Charge



Avalanche Test Circuit and Waveforms

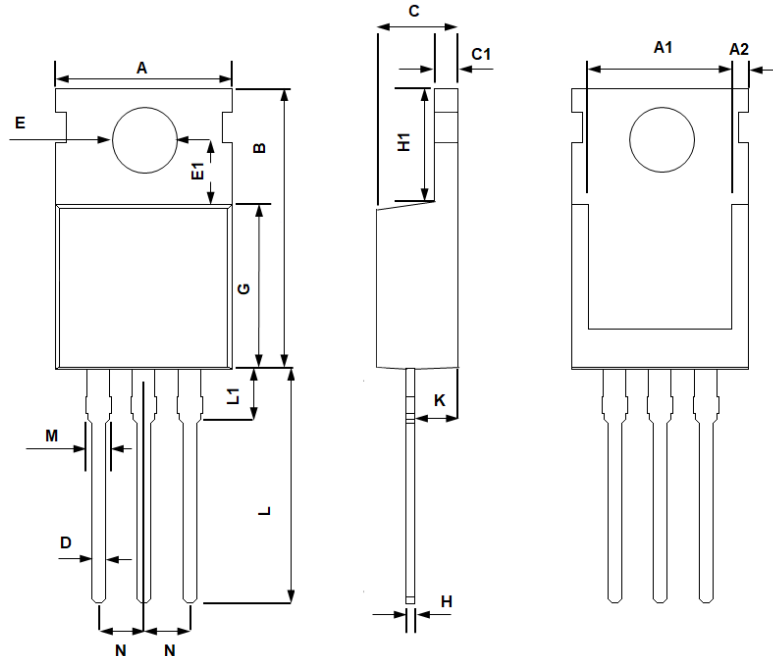


Switching Time Test Circuit and Waveforms



Package Information

TO-220



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	10.400	9.700	0.409	0.382
A1	8.900	7.400	0.350	0.291
A2	1.400	0.800	0.055	0.031
B	16.500	14.500	0.650	0.571
C	4.750	4.200	0.187	0.165
C1	1.500	1.100	0.059	0.043
D	1.000	0.600	0.039	0.024
E	4.000	3.300	0.157	0.130
E1	3.800	3.400	0.150	0.134
G	9.400	8.400	0.370	0.331
H	0.600	0.200	0.024	0.008
H1	6.850	6.200	0.270	0.244
K	2.850	2.100	0.112	0.083
L	14.000	12.500	0.551	0.492
L1	4.000	2.700	0.157	0.106
M	1.750	1.100	0.069	0.043
N	2.640	2.440	0.104	0.096