

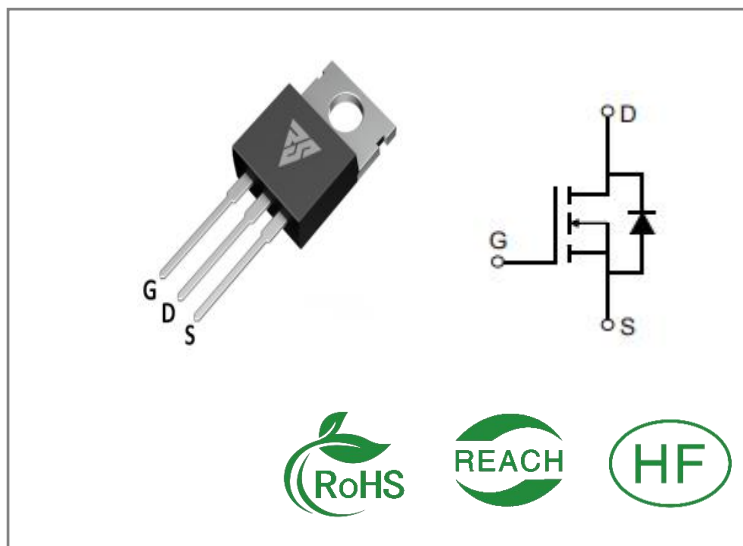
ID	$R_{DS(ON)}$ (Typ)	VDSS
80A	4.9m Ω	60V

Applications:

- Load Switch
- PWM Applications
- Power Managment

Features:

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability


Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS60N80UHT	T0-220-3	60N80UHT	Tube	50 PCS

Absolute Maximun Ratings $T_c = 25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	RS60N80UHT	Units
VDSS	Drain-to-Source Voltage	60	V
ID	Continuous Drain Current $T_C = 25^{\circ}\text{C}$	80	A
ID	Continuous Drain Current $T_C = 100^{\circ}\text{C}$	36	
IDM	Pulsed Drain Current	240	
PD	Power Dissipation	167	W
VGS	Gate- to- Source Voltage	± 20	V
EAS	Single Pulse Avalanche Engergy $T_j = 25^{\circ}\text{C}$ $L = 0.5\text{mH}$, $V_{DD} = 30\text{V}$, $V_G = 10\text{V}$, $R_G = 25\Omega$, $I_{AS} = 23\text{A}$	132	mJ
TL TPKG	Maximum Temperature for Soldering	300 260	$^{\circ}\text{C}$
	Leads at 0.063in(1.6mm)from Case for 10 seconds		
	Package Body for 10 seconds		
TJ and TSTG	Operating Junction and Storage Temperature Range	-55 to 150	

* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the " Absolute Maximum Ratings" Table may cause permanent damage to the device.

Thermal Resistance

Symbol	Parameter	RS60N80UHT	Units	Test Conditions
R θ JC	Junction-to-Case	0.75	°C / W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 150 °C
R θ JA	Junction-to-Ambient* 3	69		1 cubic foot chamber, free air.

OFF Characteristics T_J= 25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	60	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=60V VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=20V VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-20V VDS=0V

ON Characteristics T_J=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance	--	4.9	5.6	mΩ	VGS=10V ID=30A
VGS (TH)	Gate Threshold Voltage	2.4	2.8	3.6	V	VGS=VDS ID=250μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	10	--	nS	VDS=30V ID=20A RG=4.5Ω VGS=10V
trise	Rise Time	--	28	--		
td(OFF)	Turn- OFF Delay Time	--	20	--		
tfall	Fall Time	--	25	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	1504	--	pF	VGS= 0V VDS=25V f=1MHz
Coss	Output Capacitance	--	924	--		
Crss	Reverse Transfer Capacitance	--	71	--		
Qg	Total Gate Charge	--	29	--	nC	VDS= 30V ID=20A VGS=0 to 10V
Qgs	Gate- to- Source Charge	--	8.3	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	5.8	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	60	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	240	A	
VSD	Diode Forward Voltage	--	--	1.2	V	IS=20A,VGS=0V
trr	Reverse Recovery Time	--	31	--	nS	VGS=0V IS=20A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	19	--	nC	

Notes:

- * 1. Repetitive rating, pulse width limited by maximum junction temperature.
- * 2. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$
- * 3. R θ JA is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB

Typical Feature Curve

Figure 1: Output Characteristics

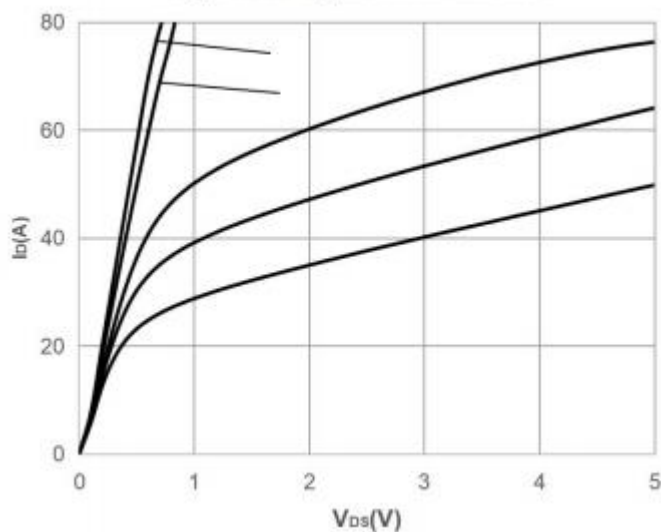


Figure 2: Typical Transfer Characteristics

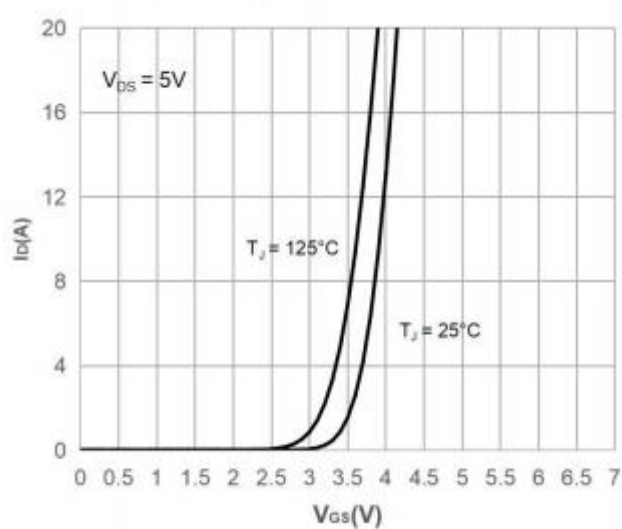


Figure 3: On-resistance vs. Drain Current

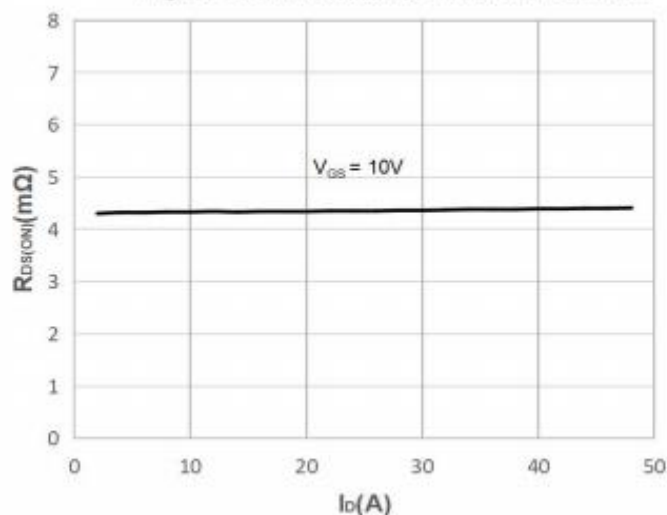


Figure 4: Body Diode Characteristics

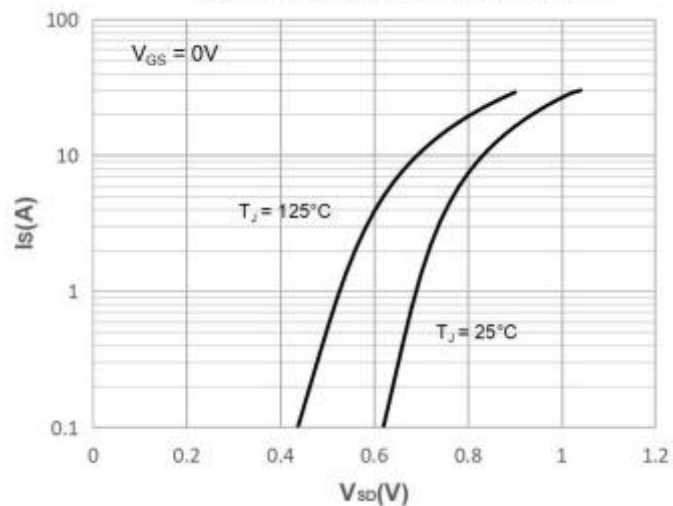


Figure 5: Gate Charge Characteristics

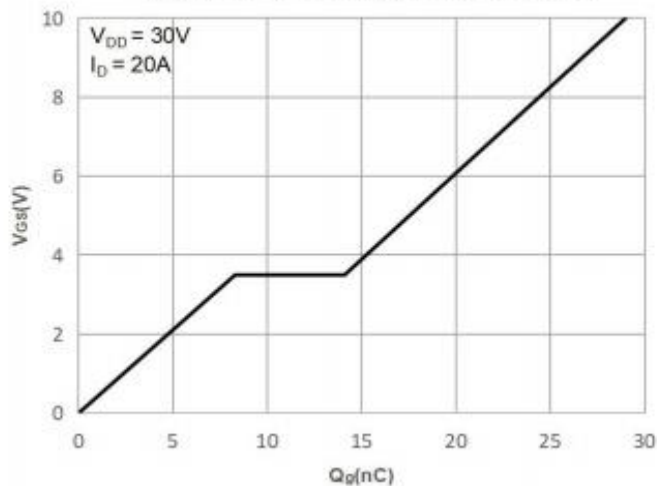


Figure 6: Capacitance Characteristics

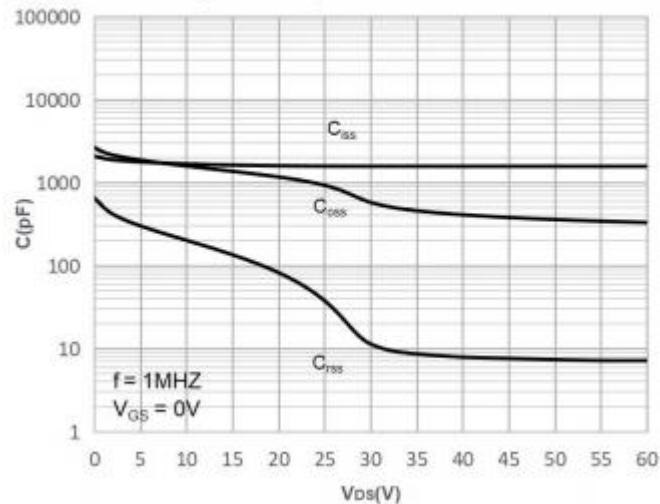


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

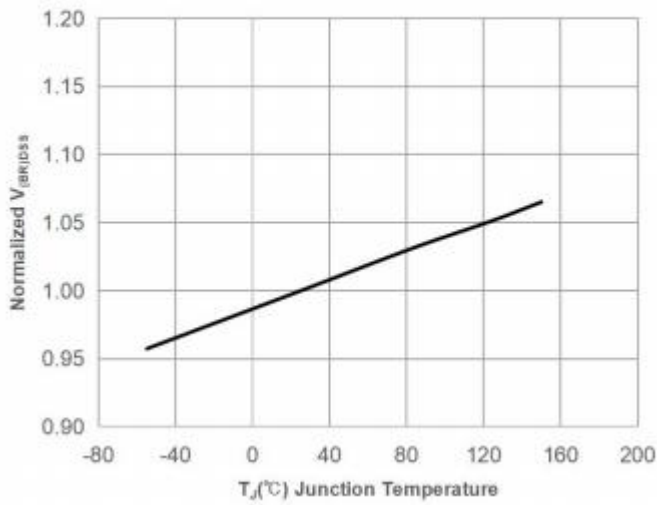


Figure 8: Normalized on Resistance vs. Junction Temperature

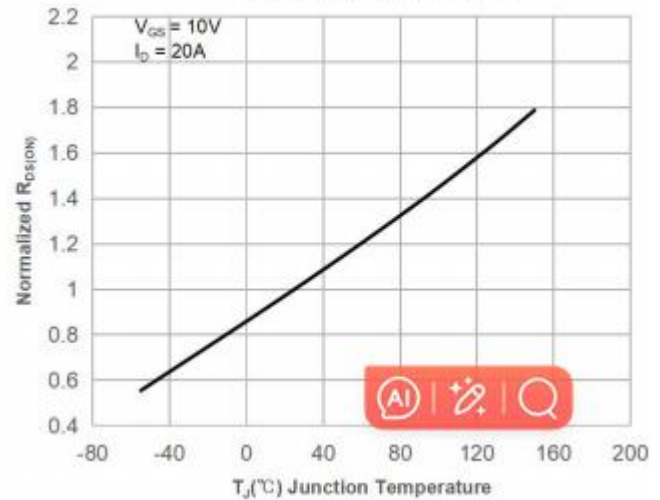


Figure 9: Maximum Safe Operating Area

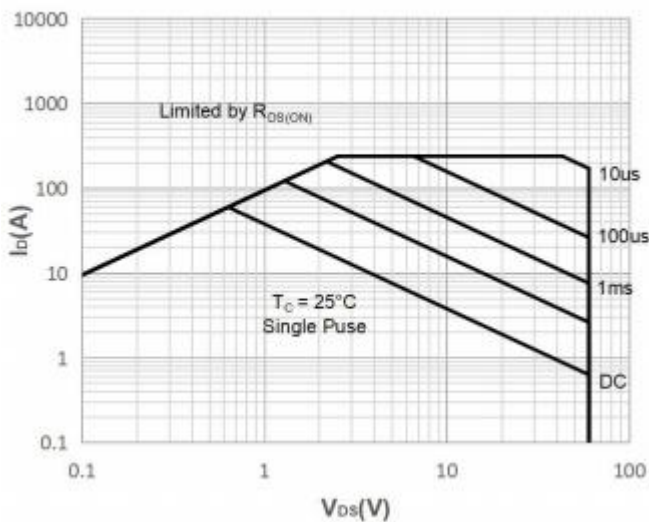


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

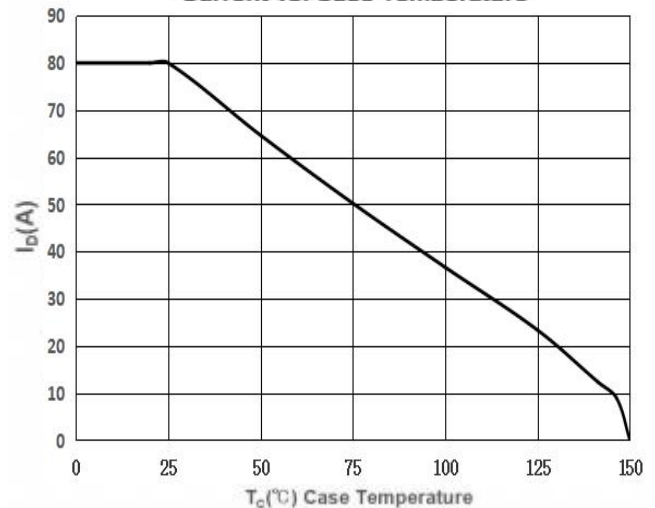


Figure 11: Normalized Maximum Transient Thermal Impedance

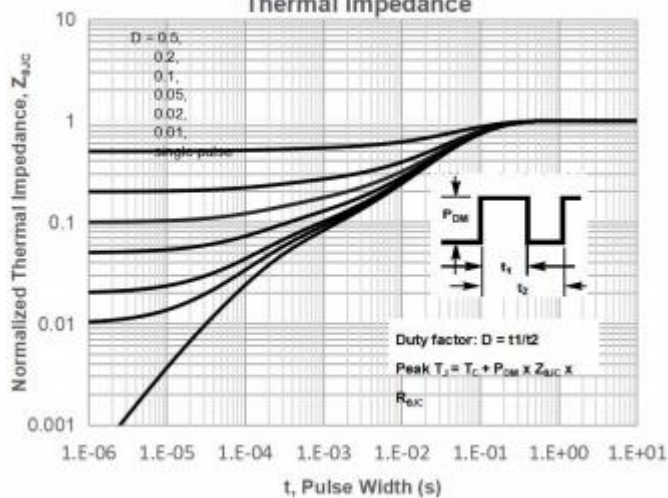
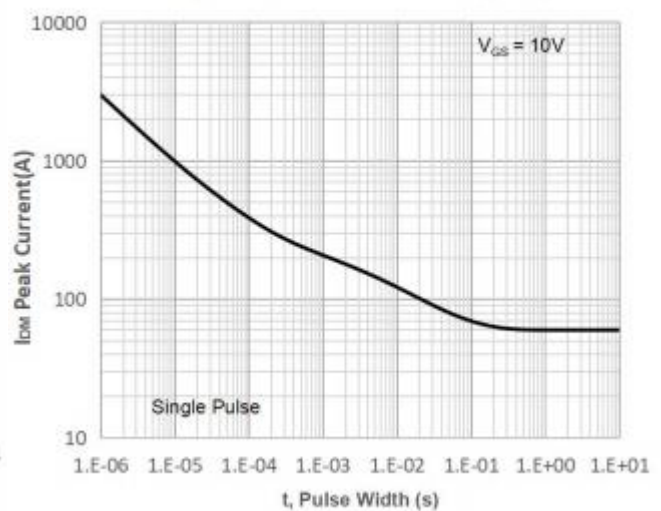
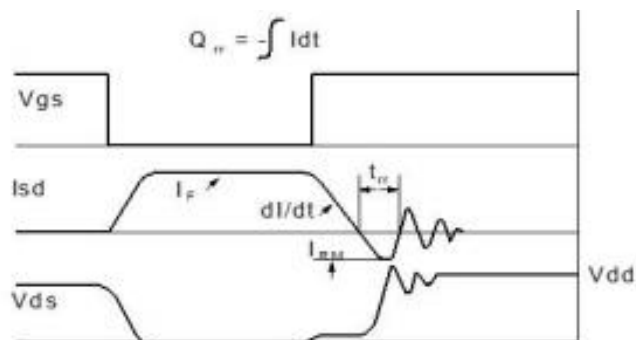
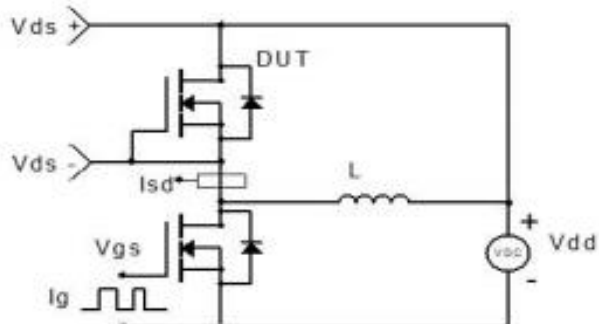
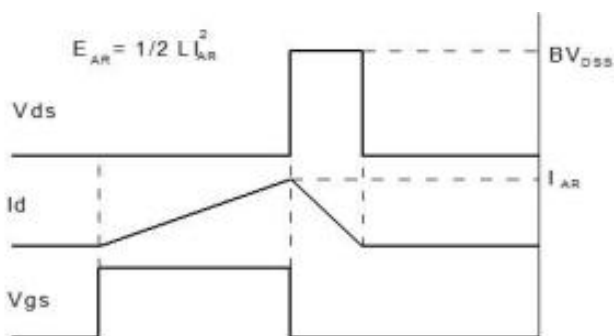
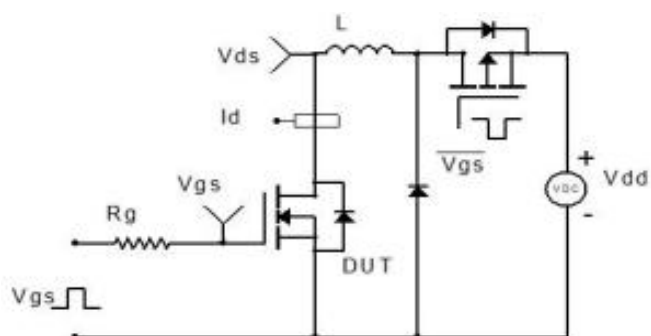
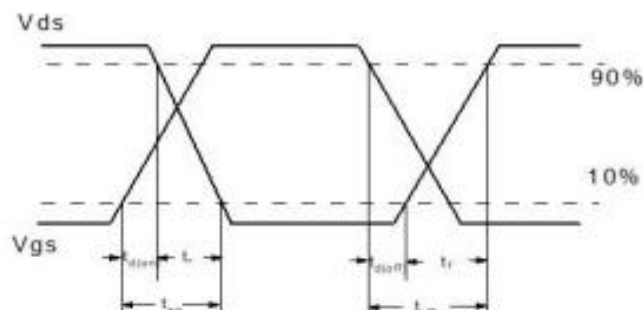
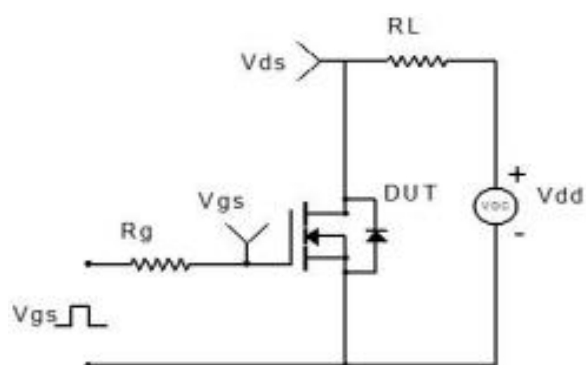
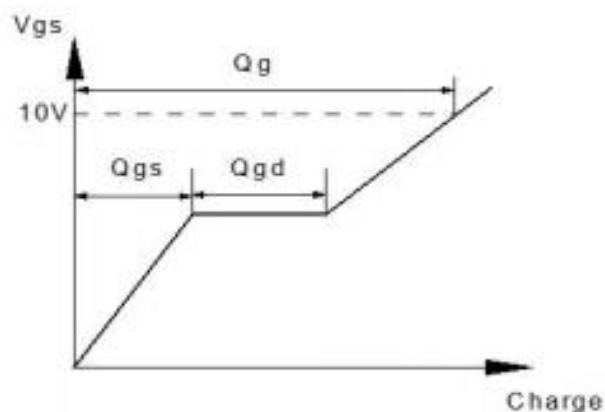
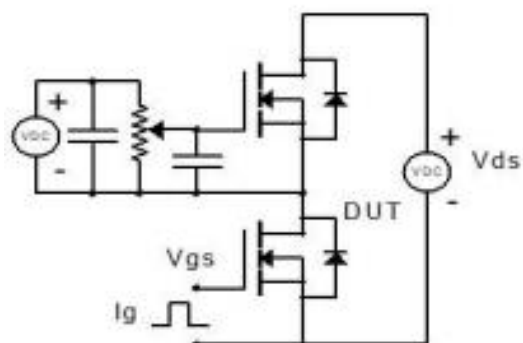
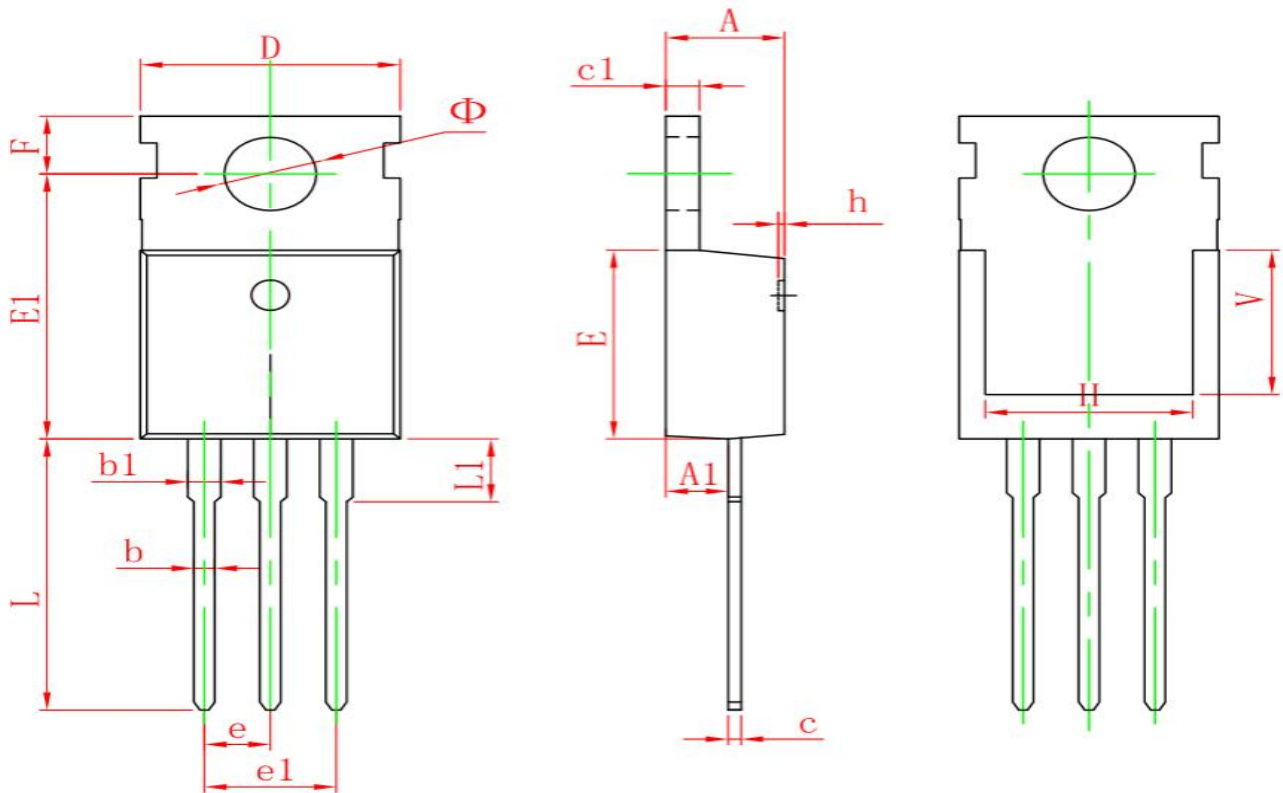


Figure 12: Peak Current Capacity



Test circuits and Waveforms



Package outline drawing(TO-220 Unit: mm)


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150

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