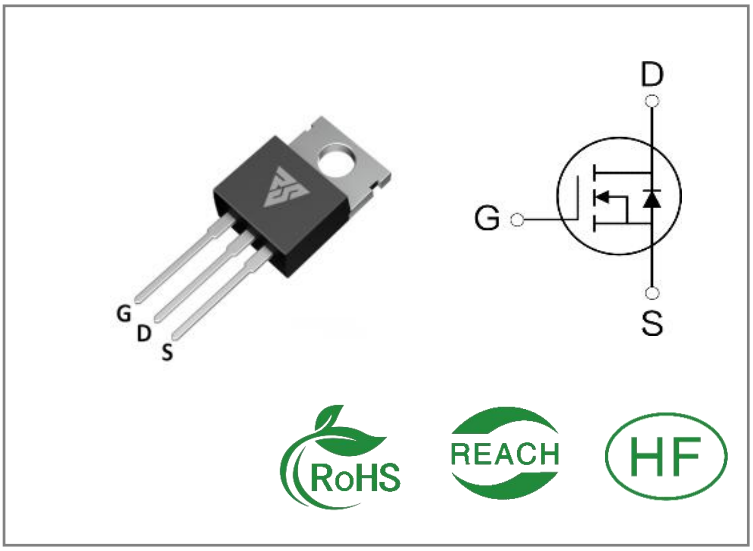
ID	R_{DS}(ON)(Typ)	VDSS
6A	2.2Ω	1200V



Applications:

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

Features:

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

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS6N120T	T0-220	RS6N120T	Tube	50 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS6N120T	Units
VDSS	Drain-to-Source Voltage	1200	V
ID	Continuous Drain Current TC=25℃	6	A
IDM	Pulsed Drain Current (Note*1)	24	
PD	Power Dissipation	204.9	W
VGS	Gate- to- Source Voltage	±30	V
EAS	Single Pulse Avalanche Engergy L = 10mH, VDD = 50V, RG = 25 Ω	259.2	mJ
TL TPKG	Maximum Temperature for Soldering	300 260	℃
	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	RS6N120F	Units	Test Conditions
RθJC	Junction-to-Case	0.61	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to-Ambient	62.5		1 cubic foot chamber,free air.

OFF Characteristics TJ= 25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	1200	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=1200V VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=30V VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-30V VDS=0V

ON Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	2.2	2.6	Ω	VGS=10V ID=3A
VGS(TH)	Gate Threshold Voltage	3.0	--	5.0	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	--	52	--	nS	VDS=600V ID=6A RG=25Ω
trise	Rise Time	--	34	--		
td(OFF)	Turn- OFF Delay Time	--	300	--		
tfall	Fall Time	--	60	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	2084	--	pF	VGS=0V VDS=25V f=1.0MHz
Coss	Output Capacitance	--	170	--		
Crss	Reverse Transfer Capacitance	--	22	--		
Qg	Total Gate Charge	--	104	--	nC	VDS=960V ID=6A VGS=10V
Qgs	Gate- to- Source Charge	--	7.5	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	38	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	6	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	24	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=3A,VGS=0V
trr	Reverse Recovery Time	--	1230	--	nS	VDD=600V IS=6A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	11.6	--	μC	

Notes:

* 1. Repetitive rating, pulse width limited by maximum junction temperature.
* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Feature Curve

Figure 1. Output Characteristics (T_J = 25℃)

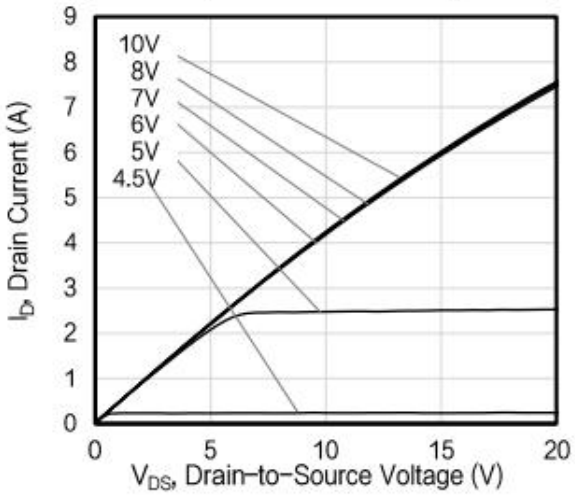


Figure 2. Body Diode Forward Voltage

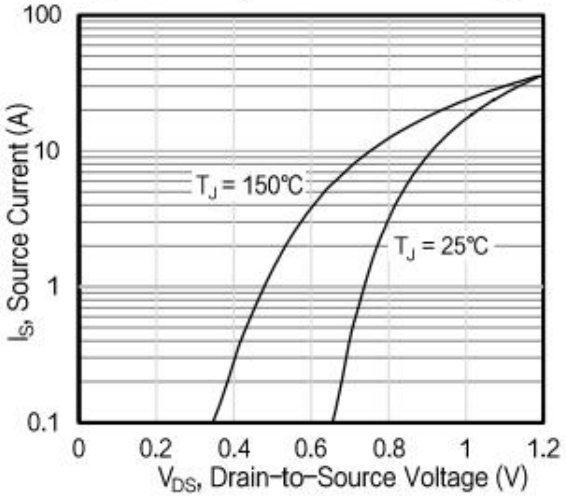


Figure 3. Drain Current vs. Temperature

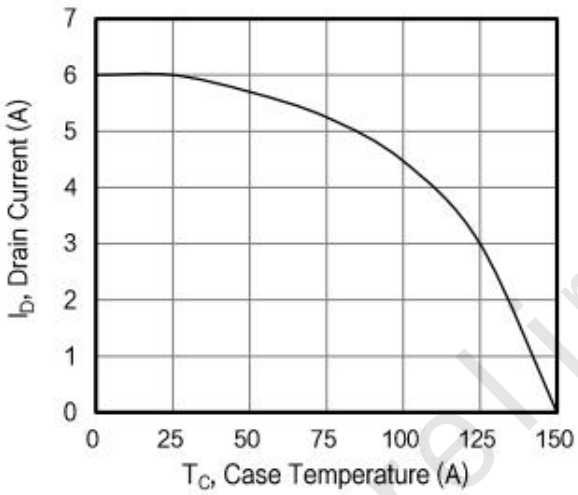


Figure 4. BV_{DSS} Variation vs. Temperature

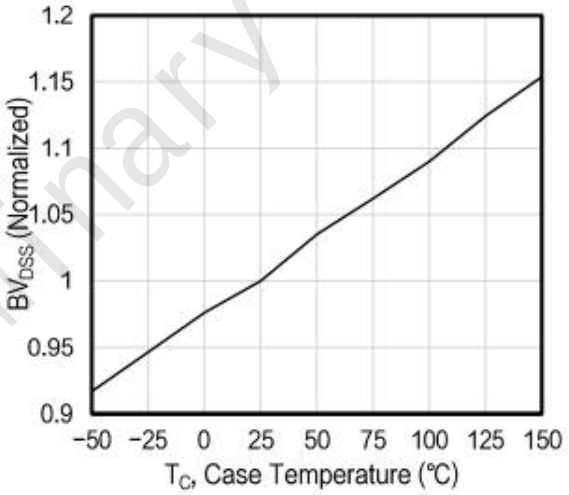


Figure 5. Transfer Characteristics

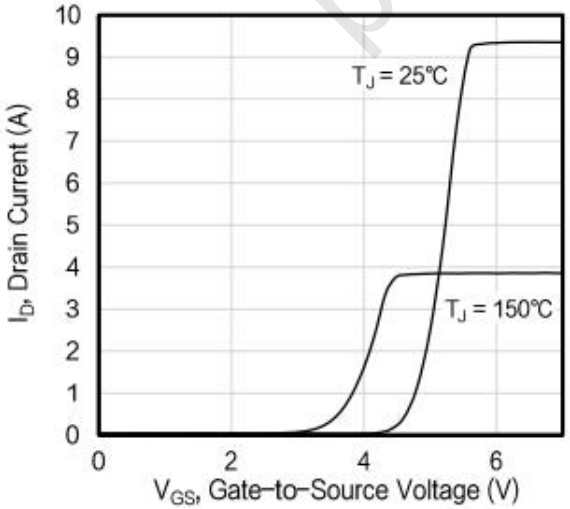


Figure 6. On-Resistance vs. Temperature

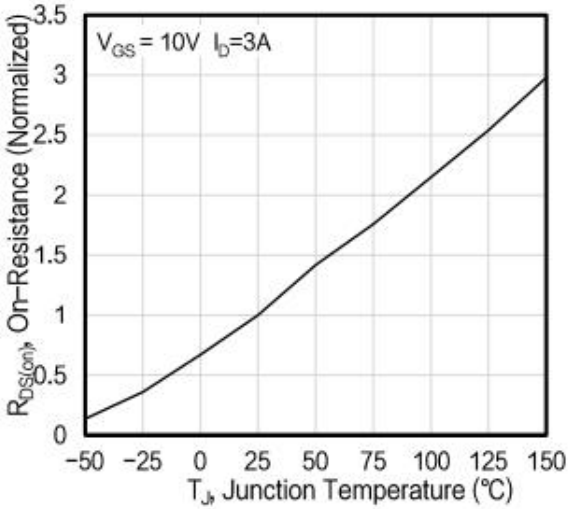


Figure 7. Capacitance

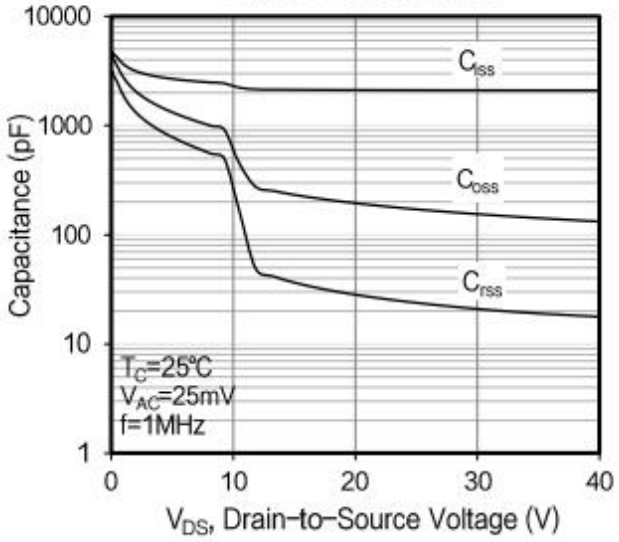


Figure 8. Gate Charge

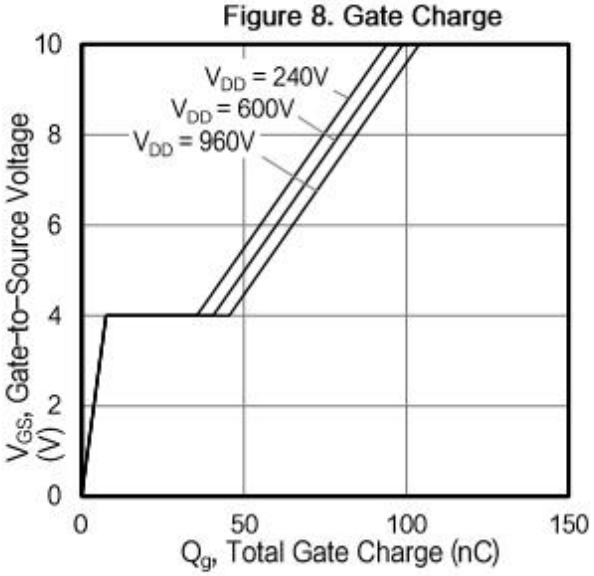


Figure 9. Transient Thermal Impedance

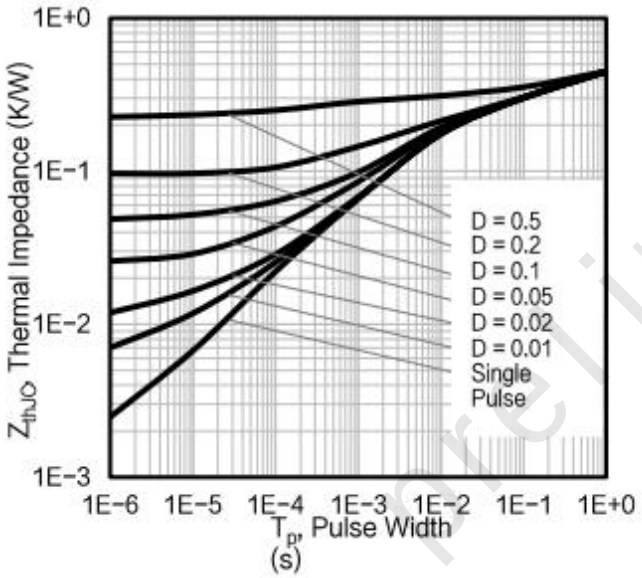
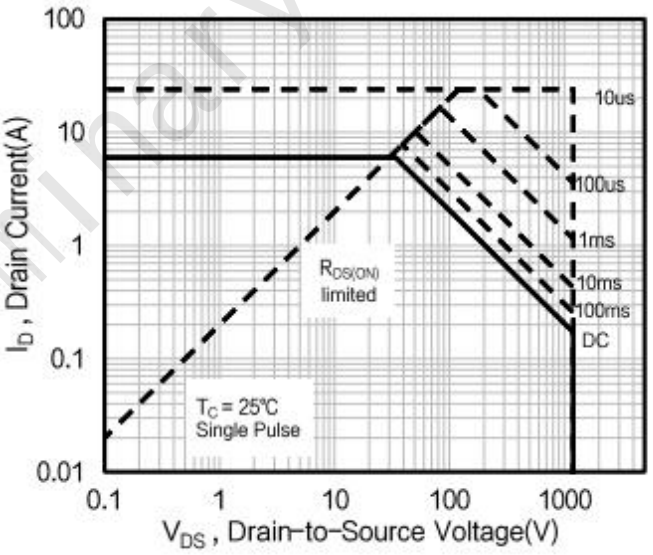


Figure 10. Safe Operation Area



Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

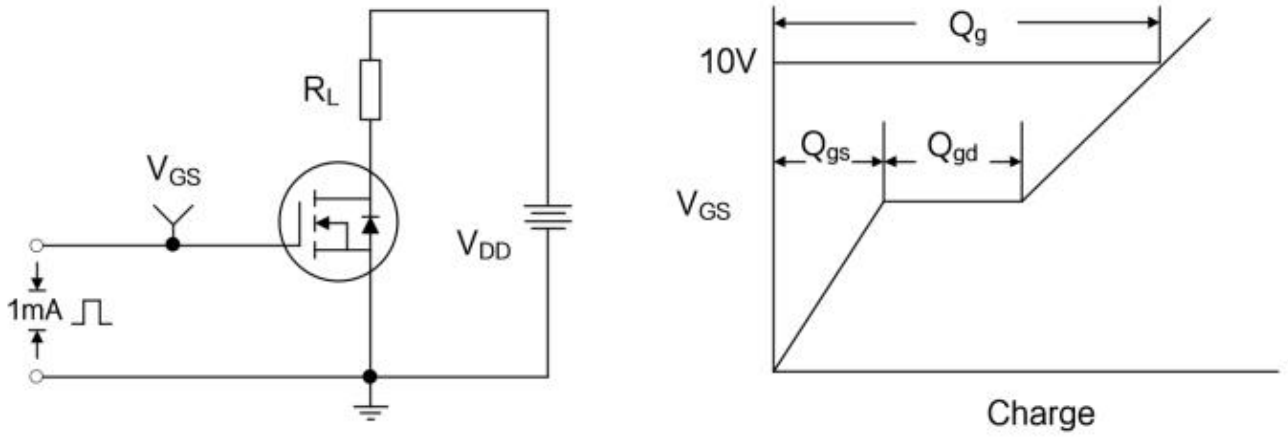


Figure B: Resistive Switching Test Circuit and Waveform

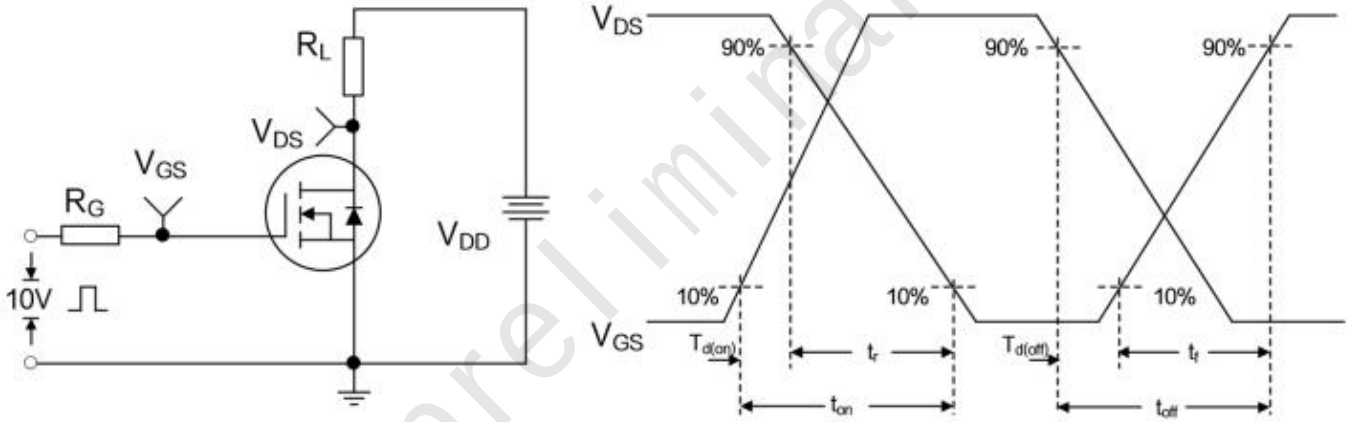
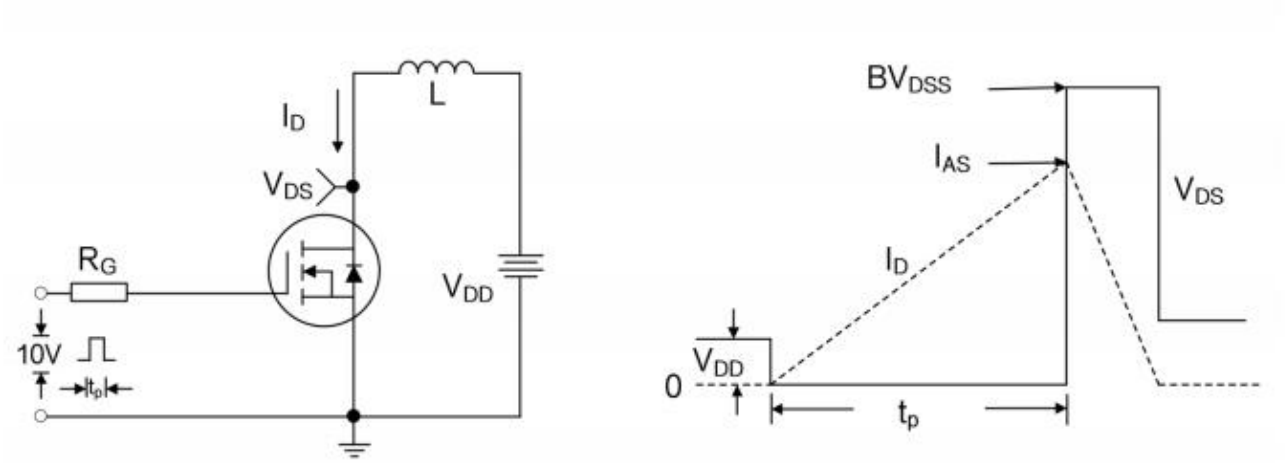
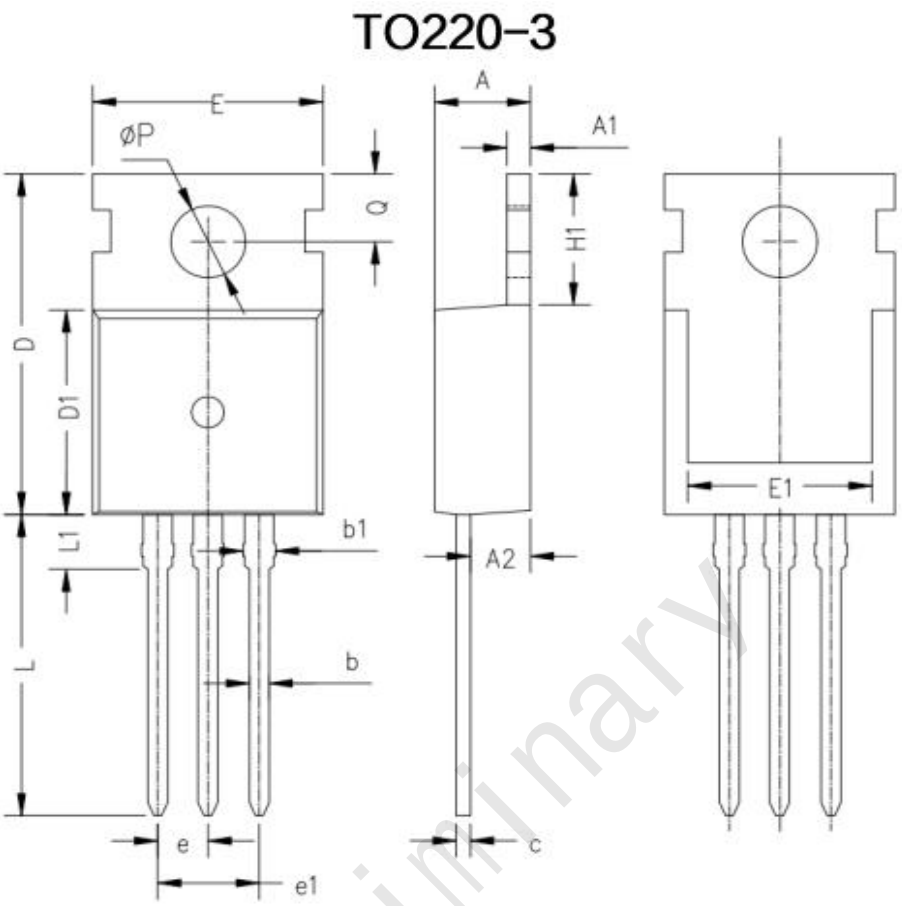


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



Package outline drawing(TO-220F Unit: mm)



SYMBOLS	MILLIMETERS	
	MIN	MAX
A	4.30	4.80
A1	1.15	1.40
A2	2.20	3.00
b	0.70	0.95
b1	1.12	1.47
c	0.32	0.65
D	14.51	16.10
D1	8.50	9.50
E	9.70	10.50
E1	7.00	8.20
e	2.54BSC	
e1	5.08BSC	
H1	6.25	6.85
L	12.75	13.90
L1	2.40	3.90
ΦP	3.40	3.95
Q	2.40	3.00

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