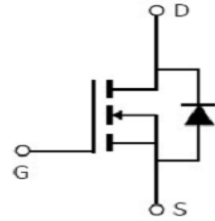




650V/7A N-Channel Advanced Power MOSFET

Features

- $R_{DS(on)}$ (Typical 1.0Ω)@ $V_{GS}=10V$
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range ($150^{\circ}C$)



Order Information

Product	Package	Marking	Packing
PTF7N65	TO-220F	PTF7N65	50PCS/Tube



TO-220F

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating	Unit
Common Ratings (T _J =25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage		±30	V
V _{(BR)DSS}	Drain-Source Breakdown Voltage		650	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		−50 to 150	°C
I _S	Diode Continuous Forward Current		7	A
Mounted on Large Heat Sink (T _J =25°C Unless Otherwise Noted)				
I _{DM}	Pulse Drain Current Tested (Silicon Limit) (Note1)		28	A
I _D	Continuous Drain current@V _{GS} =10V	T _C =25°C	7	A
P _D	Maximum Power Dissipation		48	W
E _{AS}	Sing Pulsed Avalanche Energy (Note2)		385	mJ
R _{θJC}	Thermal Resistance Junction-to-Case		2.6	°C/W
R _{θJA}	Thermal Resistance Junction-to-Ambient		62	°C/W

Note :

1. Repetitive Rating:Pulse width limited by maximum junction temperature.

2. $IL=15.7mH, I_{AS}=7A, V_{DD}=50V, R_G=25\Omega, T_J=25^{\circ}C$



650V/7A N-Channel Advanced Power MOSFET

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	650	--	--	V
I _{DSS}	Zero Gate Voltage Drain current(Tc=25°C)	VDS=650V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±30V,VDS=0V	--		±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=250μA	2	3	4	V
R _{DS(ON)}	Drain-Source On-State Resistance note A	VGS=10V,ID=3.5A	--	1.0	1.3	Ω
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated) note B						
C _{iss}	Input Capacitance	VDS=25V,VGS=0V, f=1MHz	--	930	--	pF
C _{oss}	Output Capacitance		--	100	--	pF
C _{rss}	Reverse Transfer Capacitance		--	4.5	--	pF
Q _g	Total Gate Charge	VDS=520V,ID=7A VGS=10V	--	16	--	nC
Q _{gs}	Gate-Source Charge		--	4	--	nC
Q _{gd}	Gate-Drain Charge		--	3.6	--	nC
Switching Characteristics note B						
t _{d(on)}	Turn-on Delay Time	VDS=300V ID=7A, RG=25Ω VGS=10V	--	26	--	nS
t _r	Turn-on Rise Time		--	17	--	nS
t _{d(off)}	Turn-Off Delay Time		--	57	--	nS
t _f	Turn-Off Fall Time		--	23	--	nS
Source- Drain Diode Characteristics@ T _J = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	IS= 5 A,VGS=0V	--	0.85	1.4	V

Note:

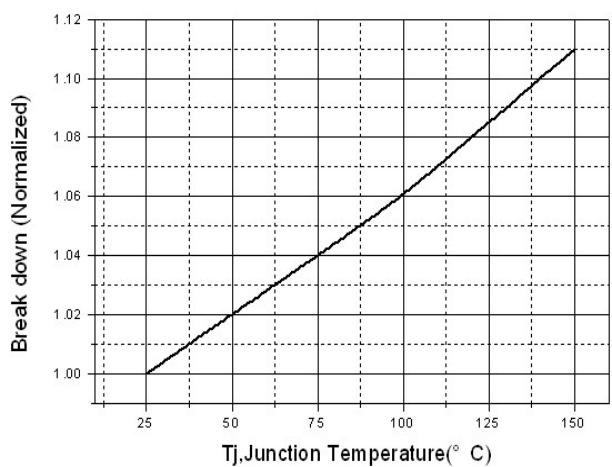
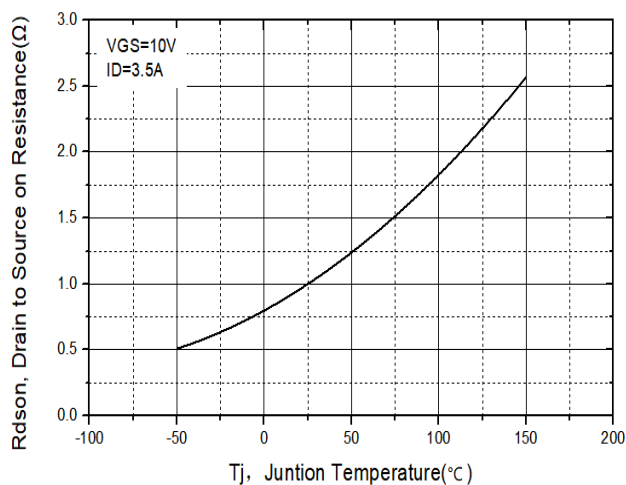
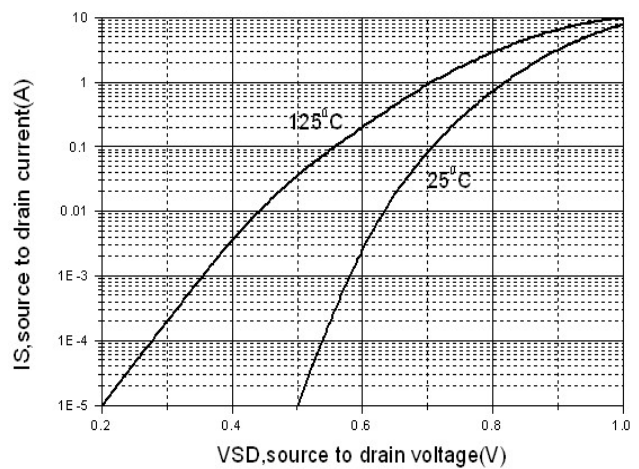
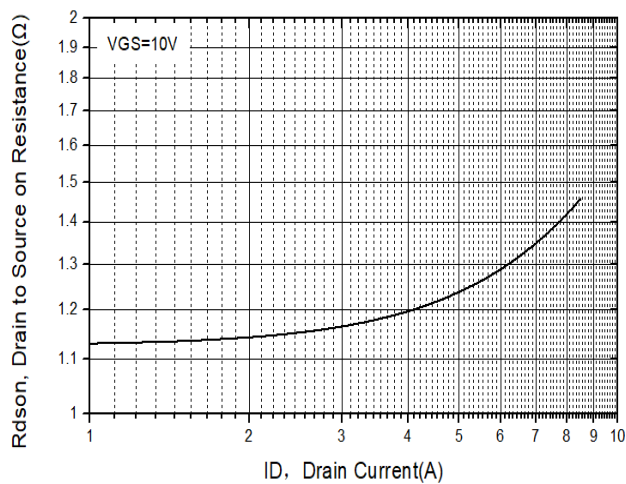
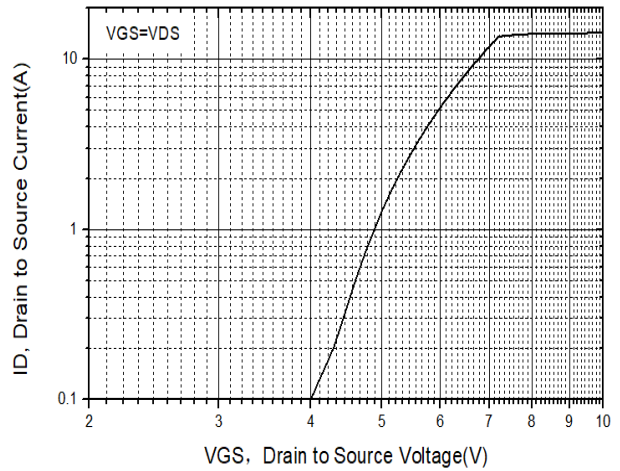
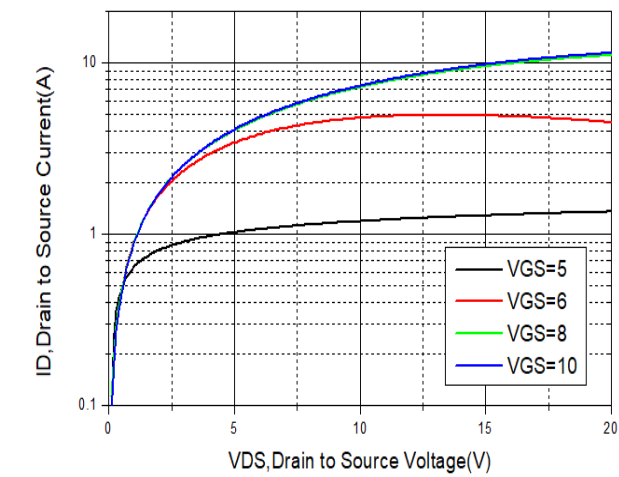
A: Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%

B:Guranteed by design, not subject to production testing.



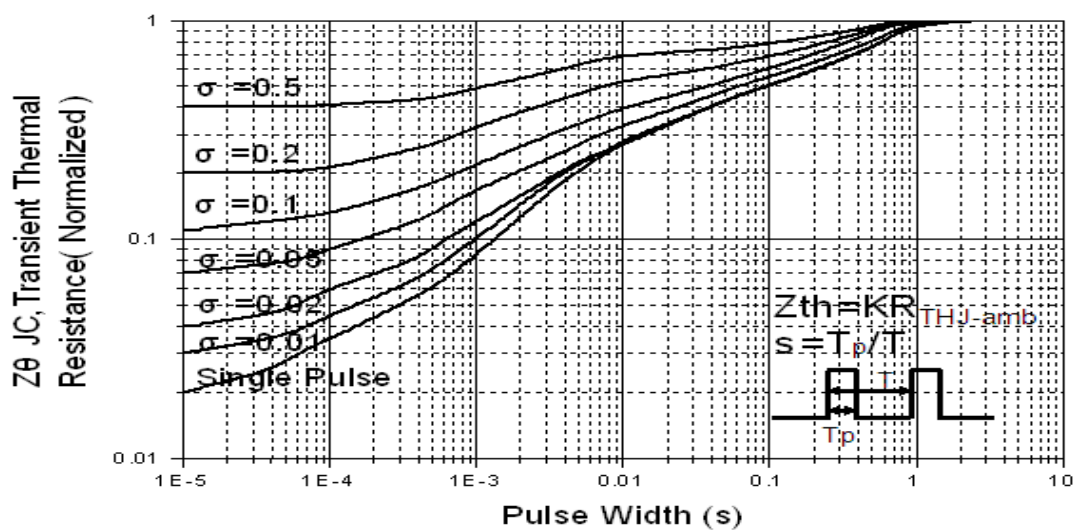
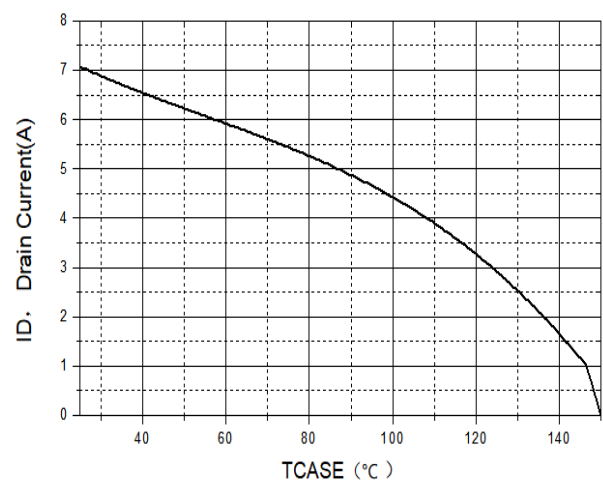
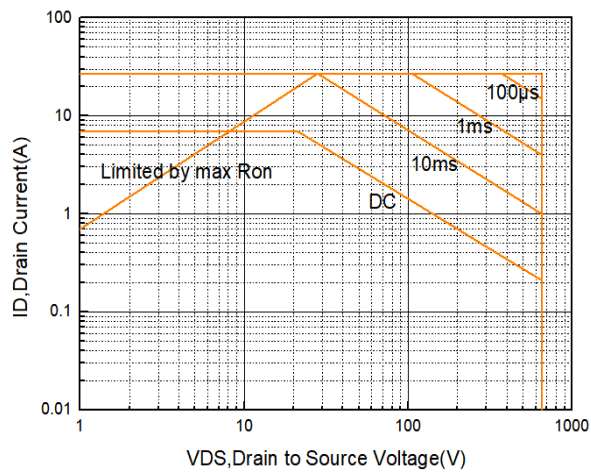
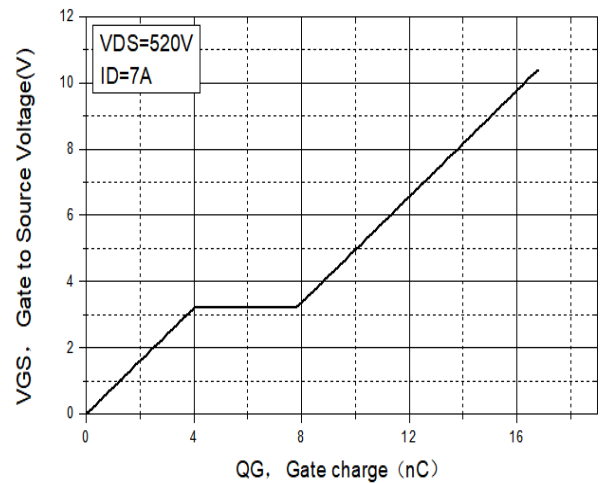
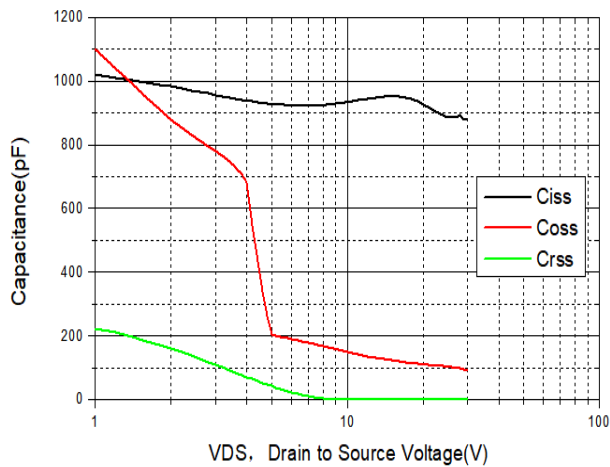
650V/7A N-Channel Advanced Power MOSFET

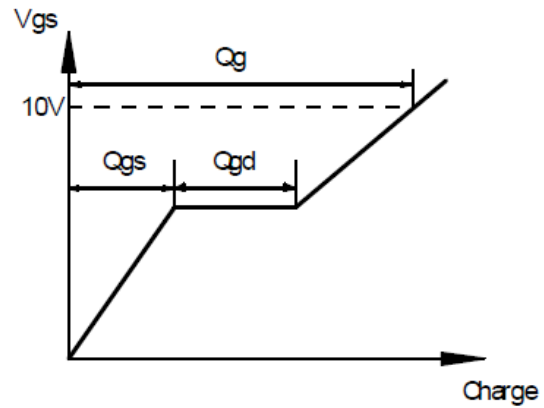
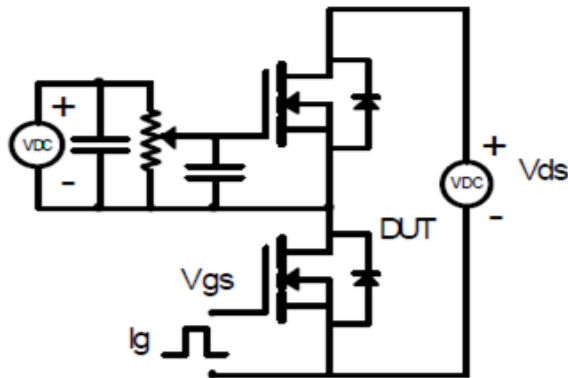
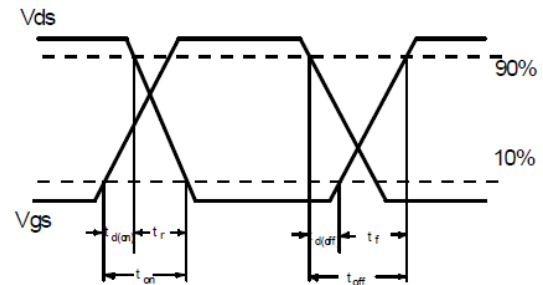
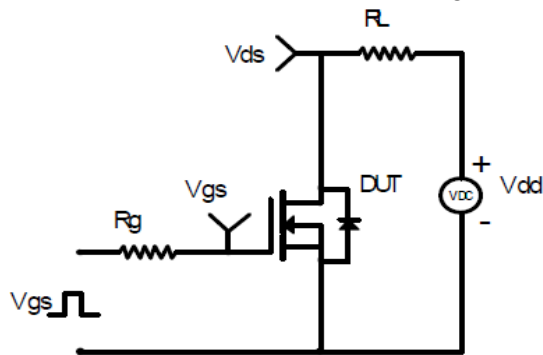
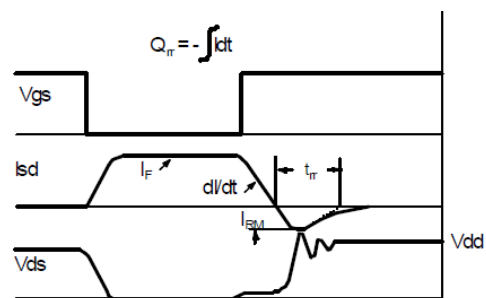
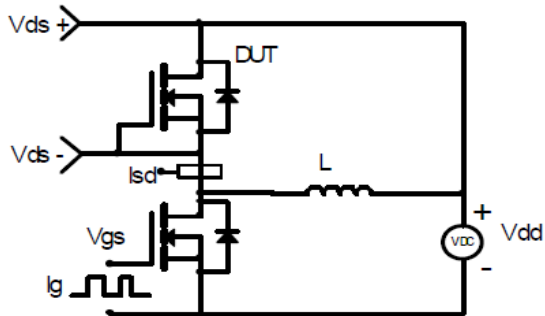
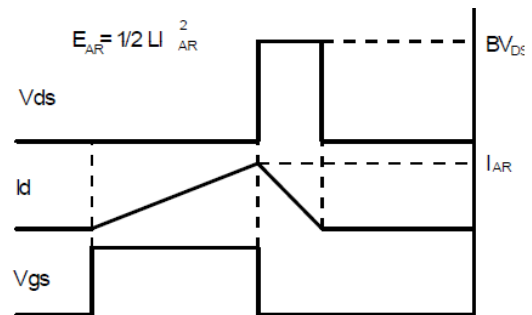
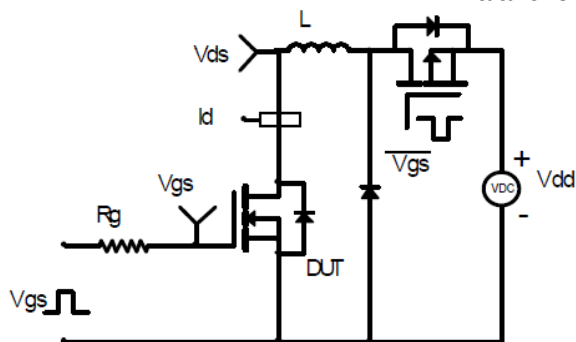
Typical characteristic curve:

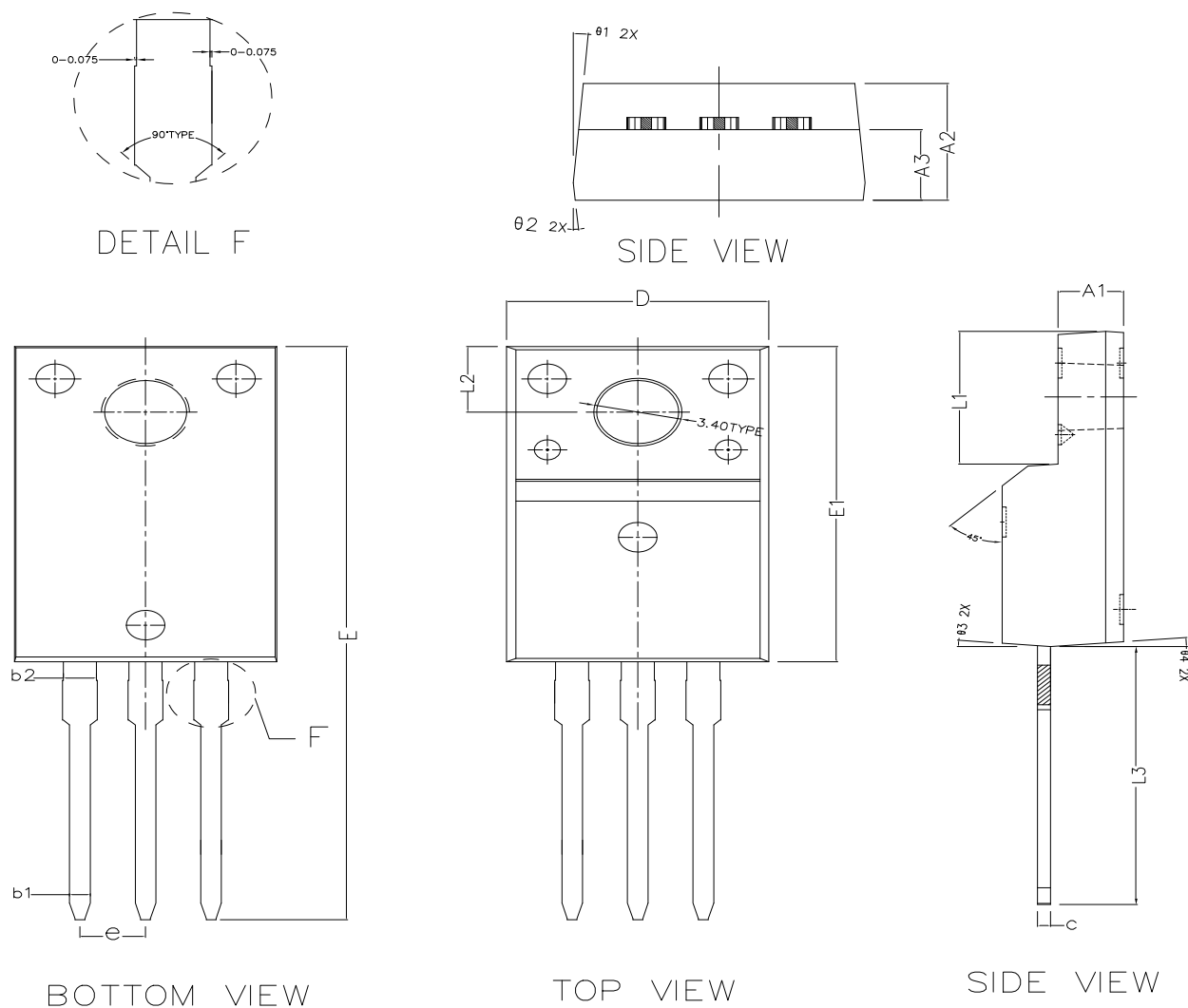




650V/7A N-Channel Advanced Power MOSFET



650V/7A N-Channel Advanced Power MOSFET
Test Circuit and Waveform
Gate Charge Test Circuit and Waveform

Switching time test circuit and waveform

Reverse Recovery Test Circuit and Waveform

Avalanche Test Circuit and Waveform


TO-220F Package Outline Dimensions (Units: mm)


COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	2.440	2.540	2.640
A2	4.600	4.700	4.800
A3	2.730	2.830	2.930
b1	0.750	0.800	0.850
b2	1.230	1.280	1.330
c	0.450	0.500	0.550
D	10.060	10.160	10.260
E	28.650	28.850	29.050
E1	15.770	15.870	15.970
e	2.54TYPE		
L1	6.68REF		
L2	3.30REF		
L3	12.830	12.980	13.130
θ1	5° TYPE		
θ2	5° TYPE		
θ3	5° TYPE		
θ4	5° TYPE		