

N-Channel Enhancement Mode Power MOSFET

Description

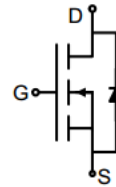
The GT095N10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

- V_{DS} 100V
- I_D (at $V_{GS} = 10V$) 68A (TO-220)
- I_D (at $V_{GS} = 10V$) 40A (TO-220F)
- $R_{DS(ON)}$ (at $V_{GS} = 10V$) $< 11m\Omega$
- $R_{DS(ON)}$ (at $V_{GS} = 10V$) $< 15m\Omega$
- 100% Avalanche Tested
- RoHS Compliant

Application

- Synchronous Rectification in SMPS or LED Driver
- UPS
- Motor Control
- BMS
- High Frequency Circuit



Schematic Diagram



TO-220



TO-220F

Device	Package	Marking	Packaging
GT095N10T	TO-220	GT095N10	50pcs/Tube
GT095N10F	TO-220F	GT095N10	50pcs/Tube

Absolute Maximum Ratings $T_C = 25^\circ C$, unless otherwise noted

Parameter	Symbol	Value		Unit
		TO-220	TO-220F	
Drain-Source Voltage	V_{DS}	100		V
Continuous Drain Current	I_D	68	40	A
Pulsed Drain Current (note1)	I_{DM}	268	160	A
Gate-Source Voltage	V_{GS}	± 20		V
Power Dissipation	P_D	78	28	W
Single pulse avalanche energy (note3)	E_{AS}	8		mJ
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150		$^\circ C$

Thermal Resistance

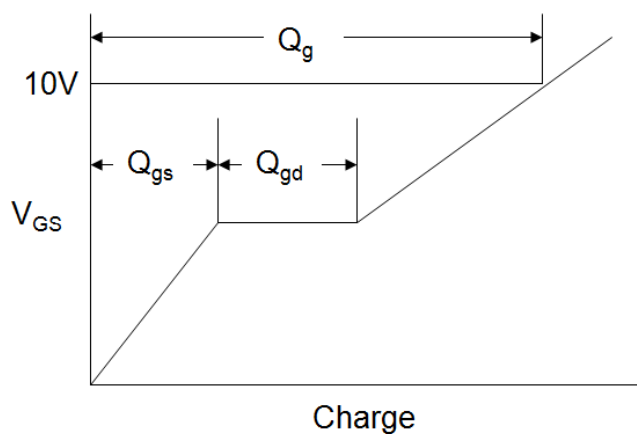
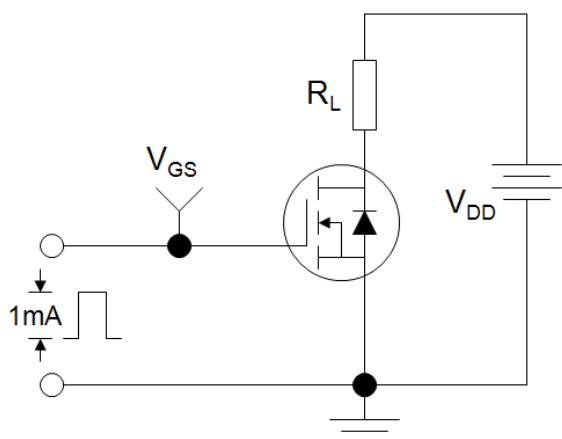
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	1.6	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	50	$^\circ C/W$

Specifications T _J = 25°C, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	100	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V	--	--	1	μA
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.5	1.8	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 35A	--	8.5	11	mΩ
		V _{GS} = 4.5V, I _D = 35A	--	12	15	
Forward Transconductance	g _{FS}	V _{DS} =5V,I _D =20A	--	15.9	--	S
Dynamic Parameters						
Input Capacitance	C _{ISS}	V _{GS} = 0V, V _{DS} = 50V, f = 1.0MHz	--	2018	--	pF
Output Capacitance	C _{OSS}		--	580	--	
Reverse Transfer Capacitance	C _{rSS}		--	28	--	
Total Gate Charge	Q _g	V _{DS} = 50V, I _D = 20A, V _{GS} = 10V	--	38.5	--	nC
Gate-Source Charge	Q _{gs}		--	8	--	
Gate-Drain Charge	Q _{gd}		--	9	--	
Turn-on Delay Time	t _{d(on)}	V _{DD} = 50V, I _D = 20A, R _G = 3Ω	--	17	--	ns
Turn-on Rise Time	t _r		--	4	--	
Turn-off Delay Time	t _{d(off)}		--	32	--	
Turn-off Fall Time	t _f		--	8	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I _S	T _C = 25°C	--	--	68	A
Body Diode Voltage	V _{SD}	T _J = 25°C, I _{SD} = 20A, V _{GS} = 0V	--	--	1.2	V
Reverse Recovery Time	T _{rr}	I _S = 20A, V _{GS} = 0V di/dt=-100A/us	--	50.4	--	ns
Reverse Recovery Charge	Q _{rr}		--	68	--	ns

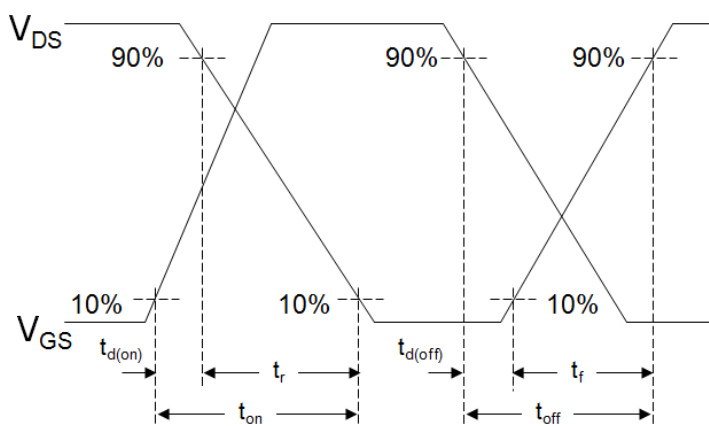
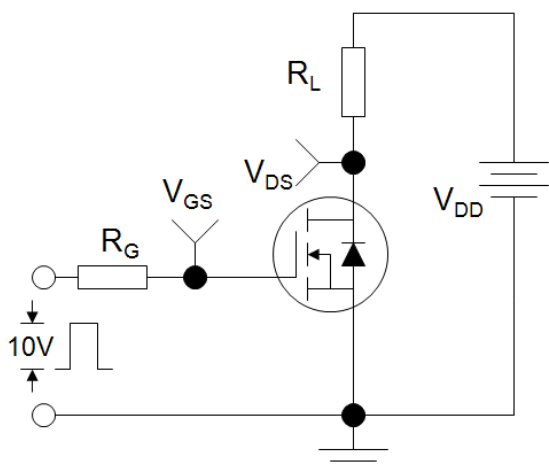
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G
3. EAS condition : $T_J=25^{\circ}\text{C}, V_{DD}=50V, V_G=10V, L=0.5mH, R_G=25\Omega$

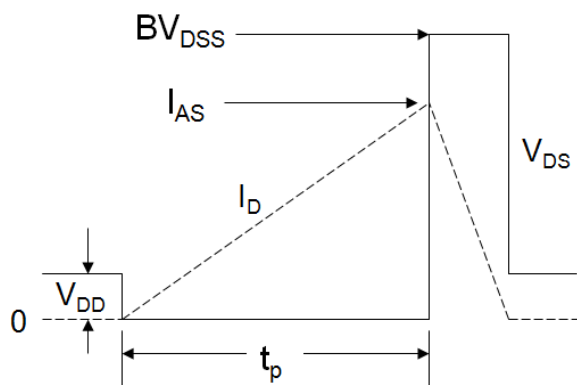
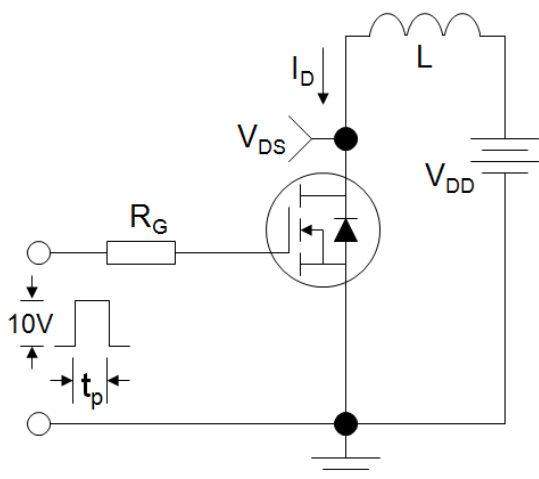
Gate Charge Test Circuit



EAS Test Circuit



Switch Time Test Circuit



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

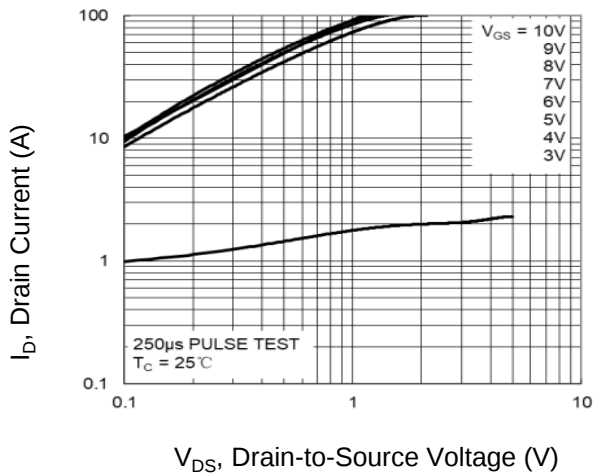


Figure 2. Transfer Characteristics

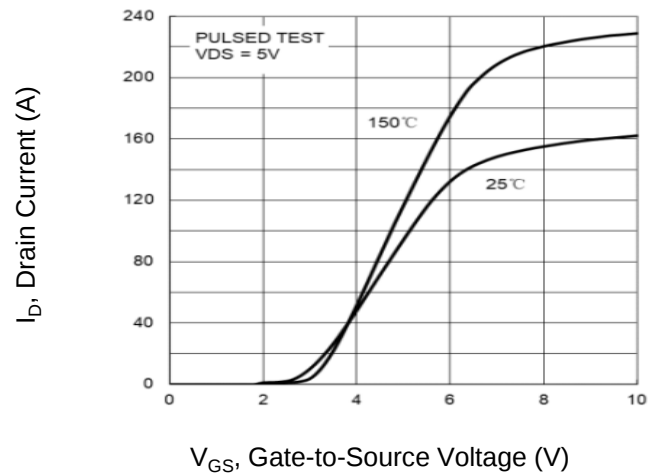


Figure 3. Gate Charge

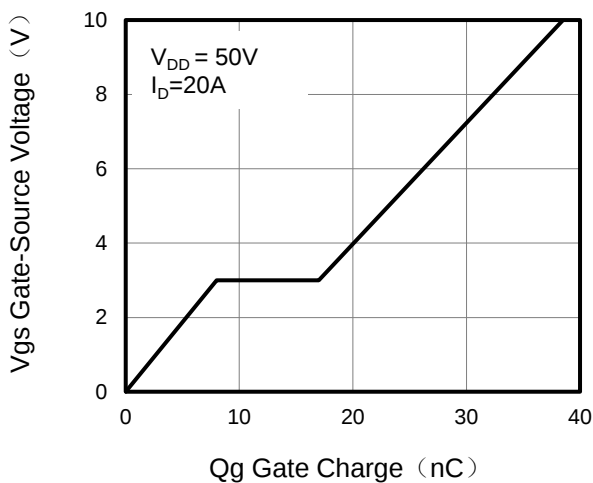


Figure 4. Drain Source On Resistance

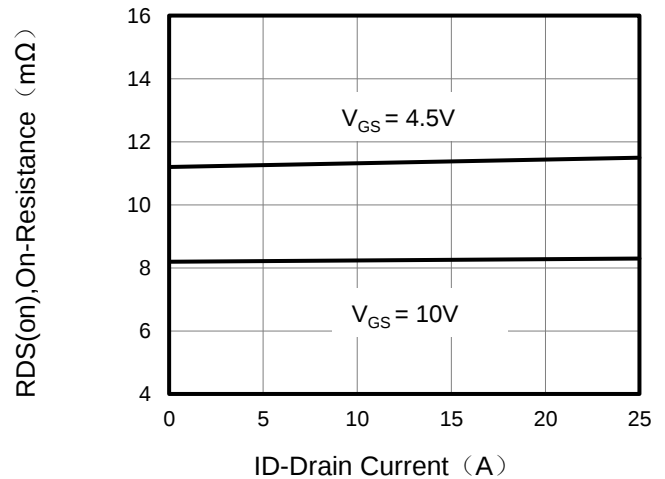


Figure 5. Capacitance vs Vds

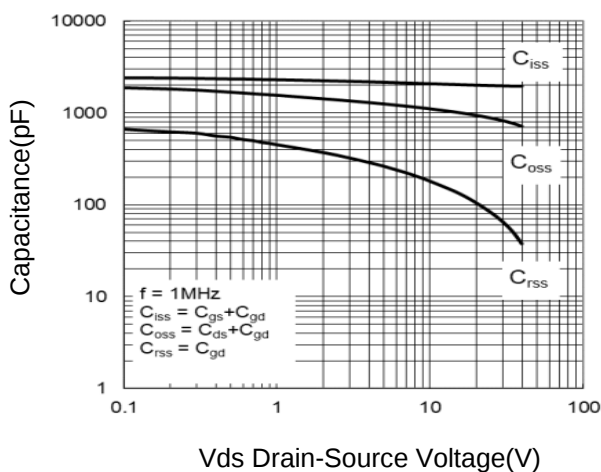
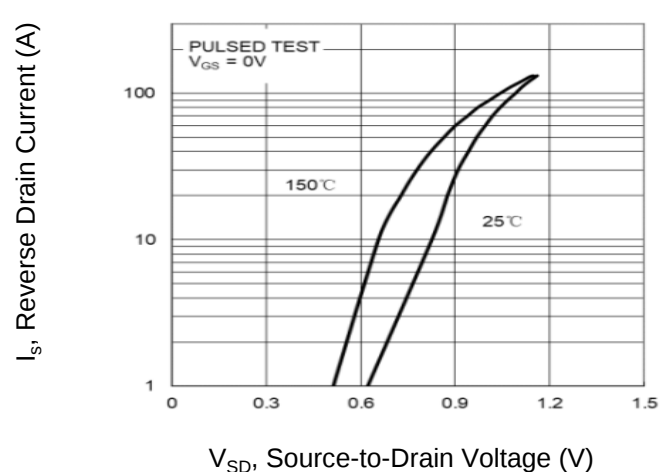


Figure 6. Source-Drain Diode Forward



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Drain-Source On-Resistance

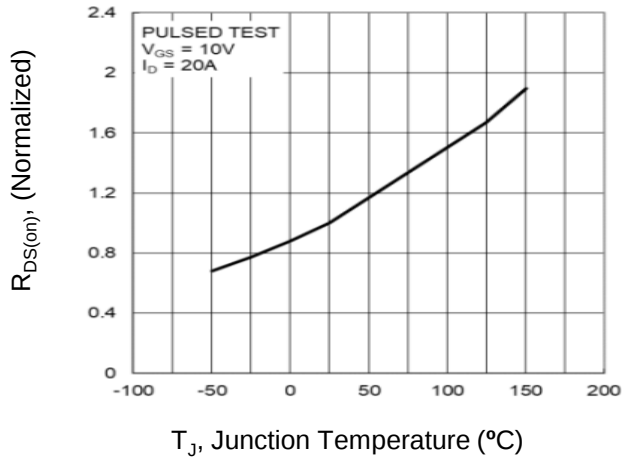


Figure 8. Safe Operation Area

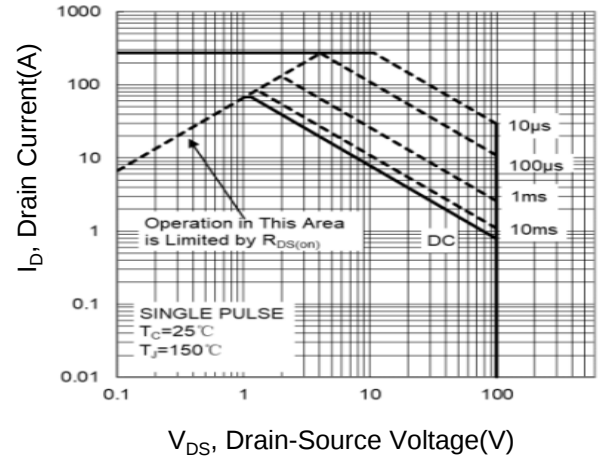
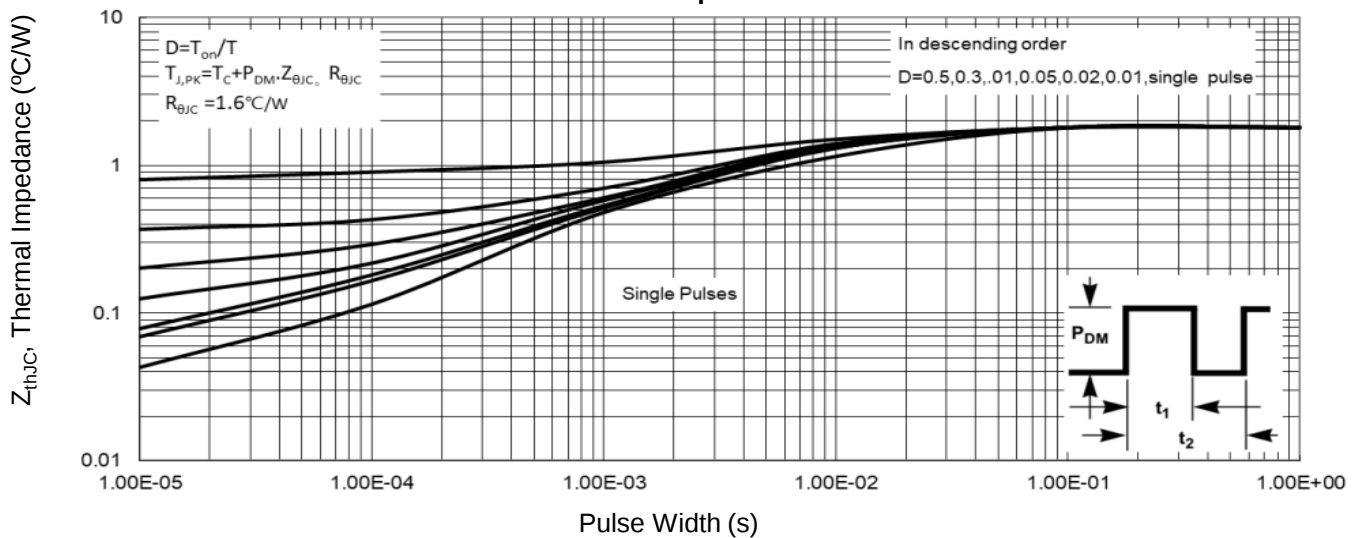
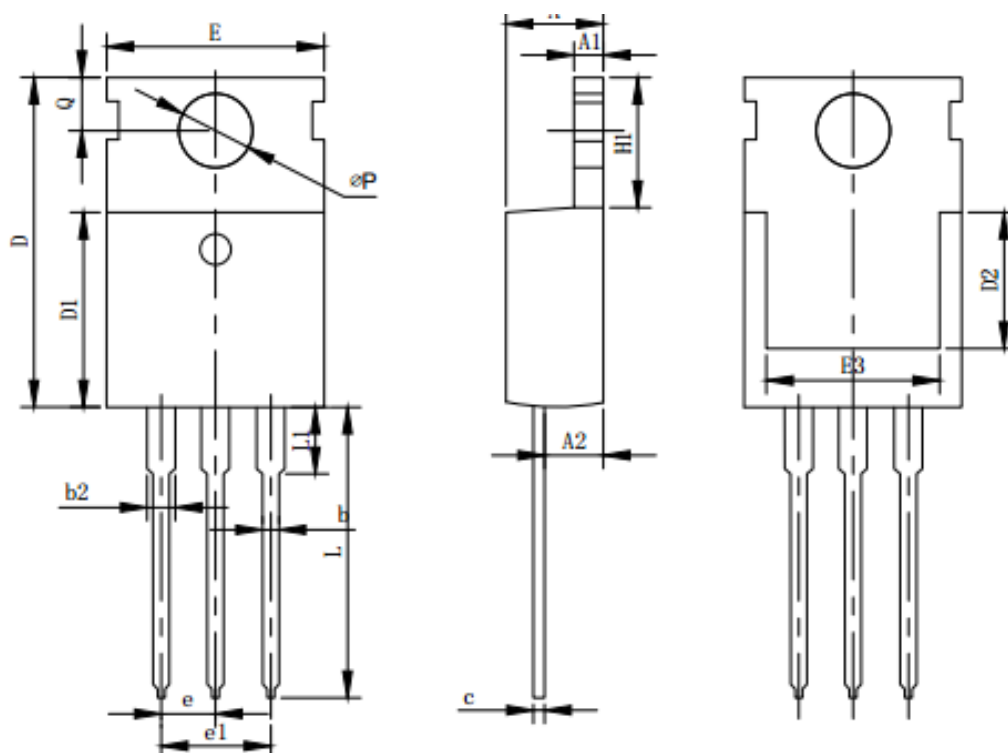


Figure 9. Normalized Maximum Transient Thermal Impedance

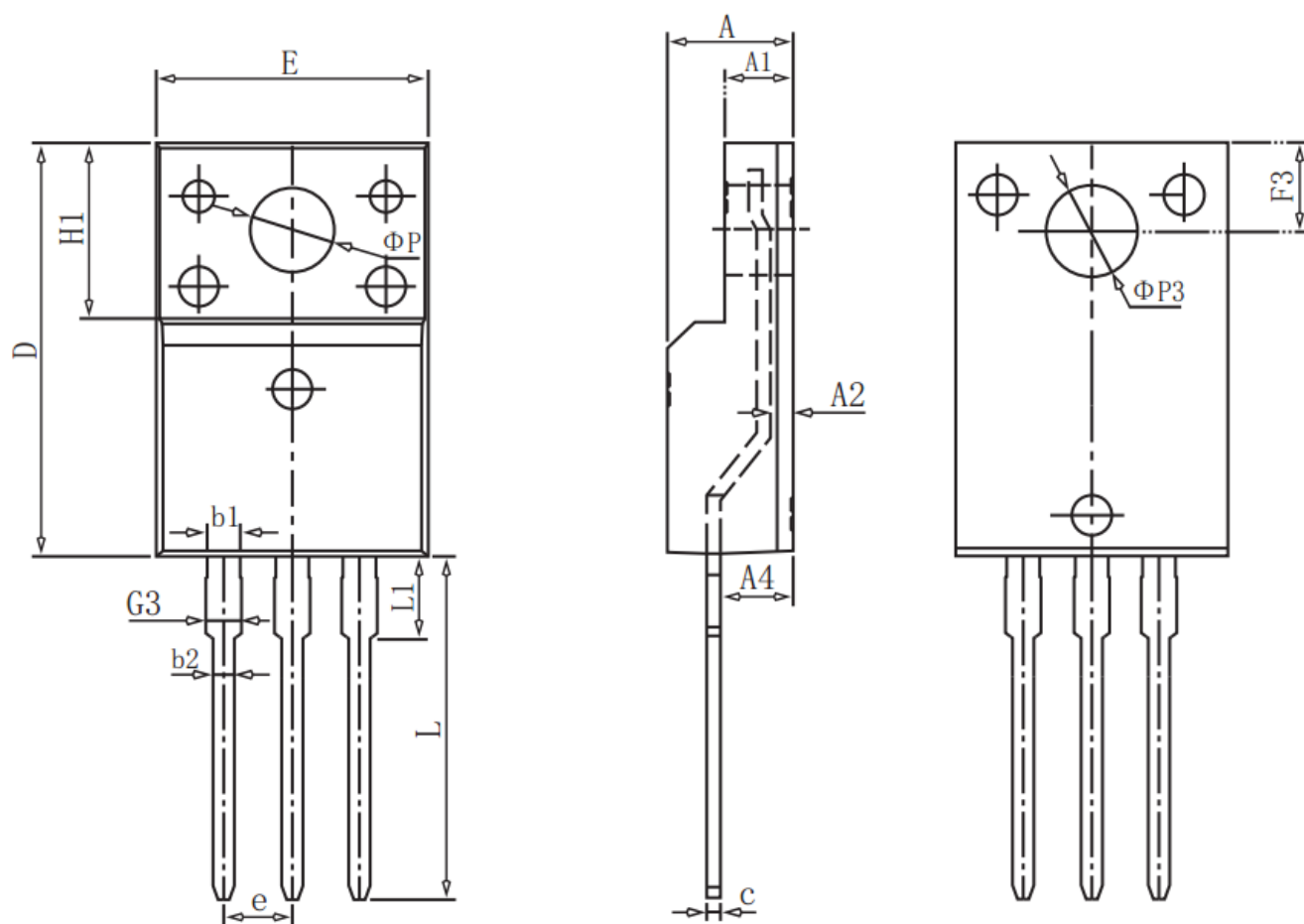


TO-220 Package Information



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	4.37	4.57	4.7
A1	1.25	1.3	1.4
A2	2.2	2.4	2.6
b	0.7	0.8	0.95
b2	1.7	1.27	1.47
c	0.45	0.5	0.6
D	15.1	15.6	16.1
D1	8.8	9.1	9.4
D2	5.5		
E	9.7	10	10.3
e	2.54BSC		
e1	5.08BSC		
H1	6.25	6.5	6.85
L	12.75	13.5	13.8
L1		3.1	3.4
øP	3.4	3.6	3.8
Q	2.6	2.8	3

TO-220F Package Information



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
E	10.00	10.20	10.40
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A2	0.65	0.85	1.30
A4	2.55	2.75	2.95
c	0.40	0.50	0.65
D	15.57	15.87	16.17
H1	6.70REF		
e	2.54BSC		
Φ P	3.183REF		
L	12.68	12.98	13.28
L1	3.25	3.45	3.65
Φ P3	3.45REF		
F3	3.10	3.30	3.50
G3	1.10	1.30	1.50
b1	1.05	1.20	1.35
b2	0.70	0.80	0.92