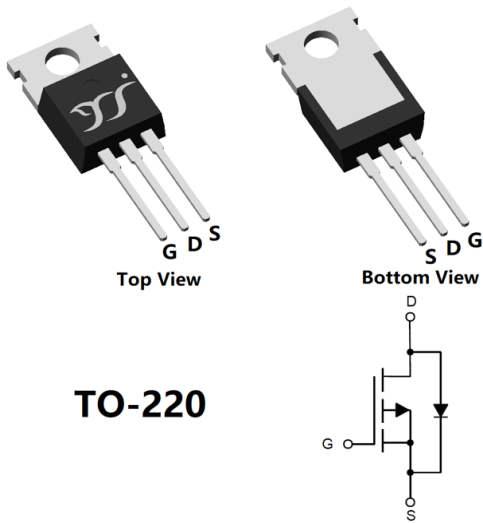


P-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} -100V
- I_D -30A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <56 m Ω
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <62 m Ω
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC-DC Converters
- Power management functions

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_c=25^\circ\text{C}$	I_D	-30	A
	$T_c=100^\circ\text{C}$		-19.2	
Pulsed Drain Current ^A		I_{DM}	-120	A
Avalanche energy ^B		E_{AS}	162	mJ
Total Power Dissipation ^C	$T_c=25^\circ\text{C}$	P_D	125	W
	$T_c=100^\circ\text{C}$		50	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$t \leq 10S$	$R_{\theta JA}$	12	15	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		50	60	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	0.8	1.0	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJP30GP10A	B1	YJP30GP10A	50	/	5000	Tube



YJP30GP10A

■ Electrical Characteristics (T_j=25°C unless otherwise noted)

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Static Parameter							
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA		-100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V	T _J =25℃			-1	μA
			T _J =55℃			-5	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V				±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA		-1.0	-1.8	-2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -10V, I _D =-15A			42	56	mΩ
		V _{GS} = -4.5V, I _D =-7A			46	62	
Diode Forward Voltage	V _{SD}	I _S =-15A, V _{GS} =0V				-1.3	V
Maximum Body-Diode Continuous Current	I _S					-30	A
Dynamic Parameters							
Input Capacitance	C _{iss}	V _{DS} =-50V, V _{GS} =0V, f=1MHZ			2100		pF
Output Capacitance	C _{oss}				236		
Reverse Transfer Capacitance	C _{rss}				48		
Switching Parameters							
Total Gate Charge	Q _g (-10V)	V _{GS} =-10V, V _{DS} =-50V, I _D =-5A			40		nC
Total Gate Charge	Q _g (-4.5V)				19.4		
Gate-Source Charge	Q _{gs}				7.8		
Gate-Drain Charge	Q _{gd}				8.6		
Reverse Recovery Chrage	Q _{rr}	I _F =-5A, di/dt=100A/us			280		ns
Reverse Recovery Time	t _{rr}				104		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-50V, I _{DS} =-5A R _{GEN} =6Ω			13		
Turn-on Rise Time	t _r				39		
Turn-off Delay Time	t _{D(off)}				100.1		
Turn-off fall Time	t _f				105.3		

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

C. Pd is based on max. junction temperature, using junction-case thermal resistance.

D. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25° C. The Power dissipation PDSM is based on RθJA ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.



■ Typical Performance Characteristics

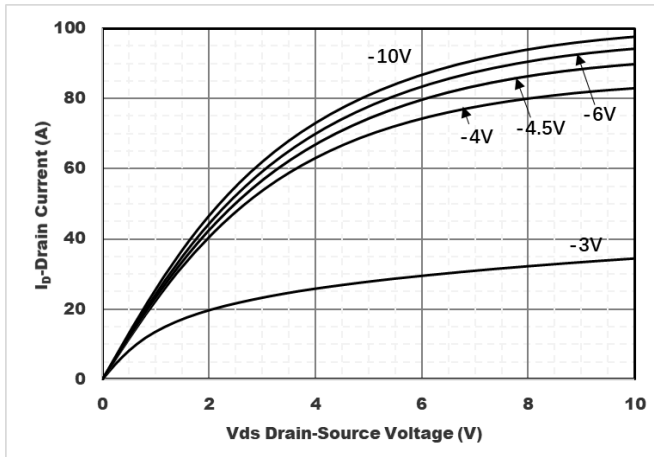


Figure1. Output Characteristics

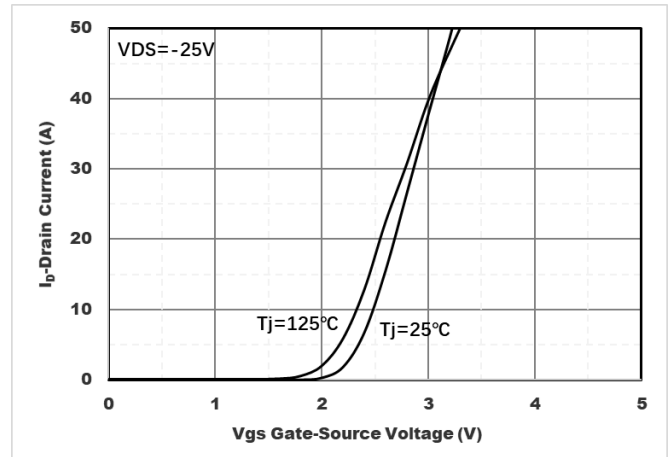


Figure2. Transfer Characteristics

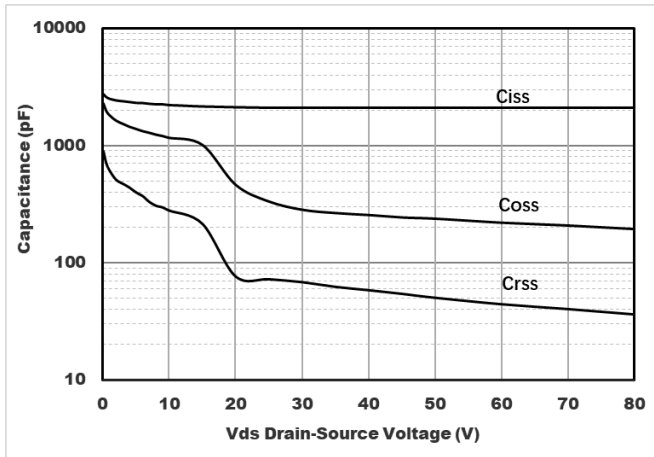


Figure3. Capacitance Characteristics

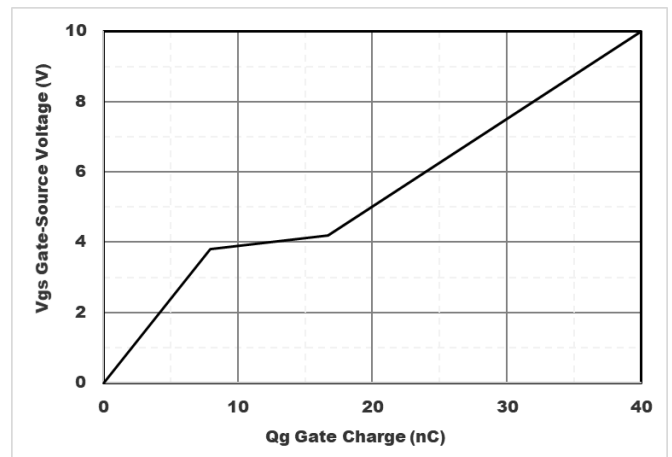


Figure4. Gate Charge

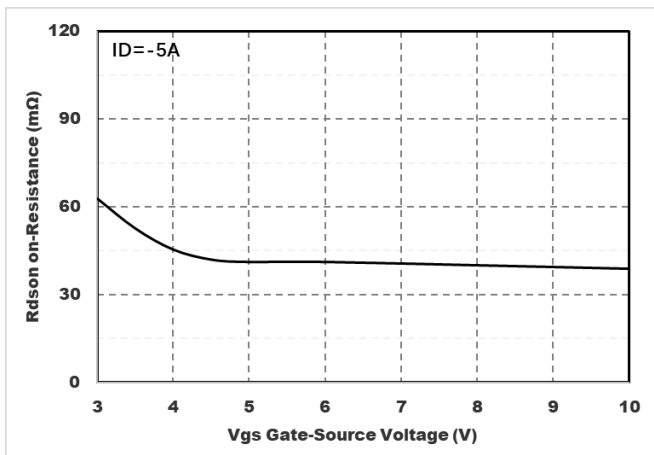


Figure5. On-Resistance vs. Gate to Source Voltage

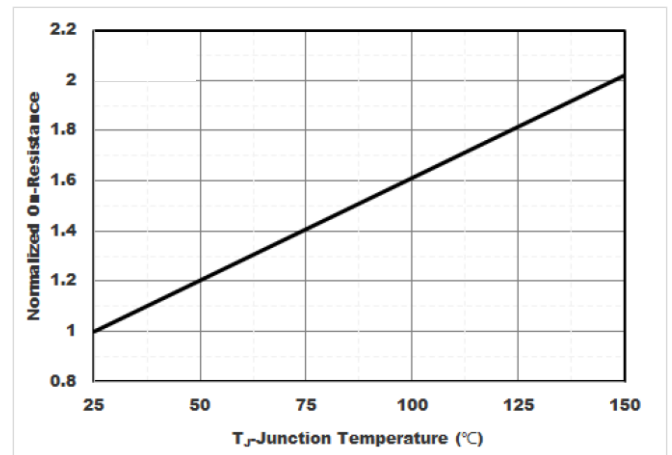


Figure6. Normalized On-Resistance



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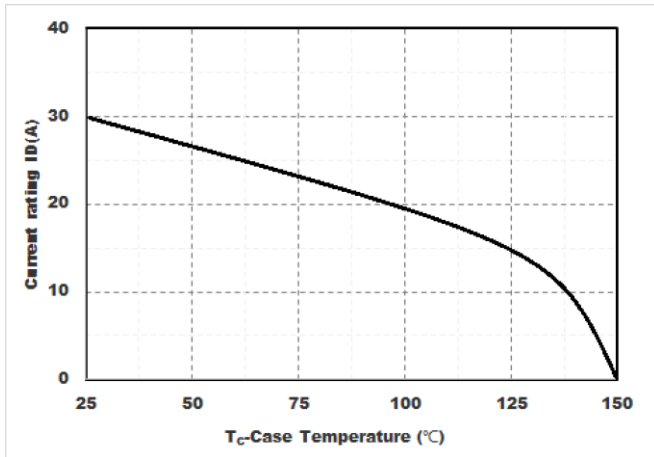


Figure7. Drain current

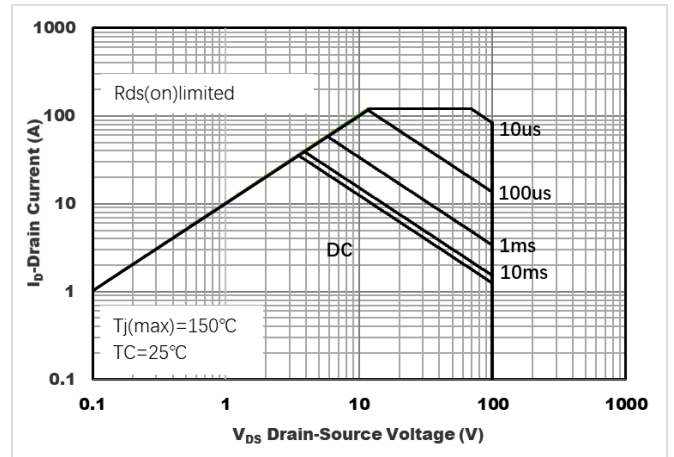


Figure8. Safe Operation Area

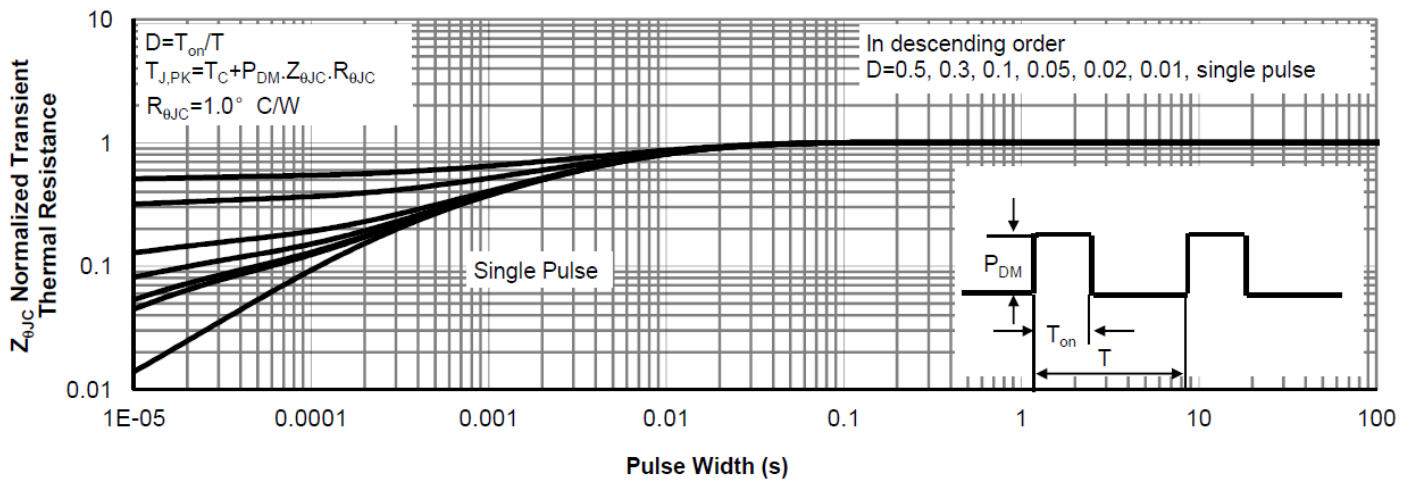


Figure9. Normalized Maximum Transient thermal impedance

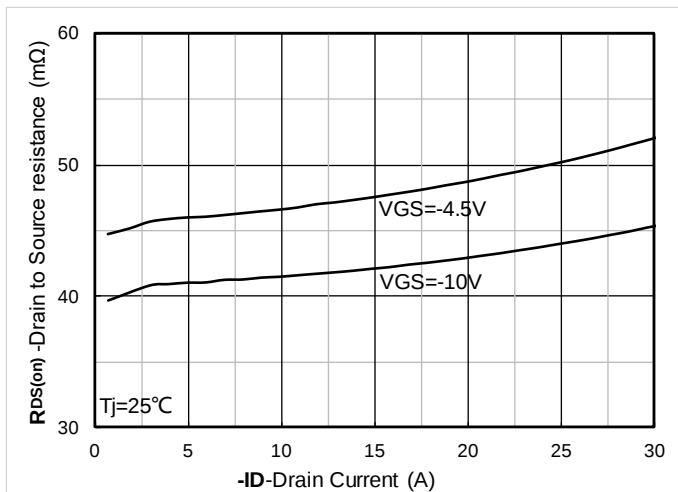


Figure10. $R_{DS(on)}$ VS Drain Current

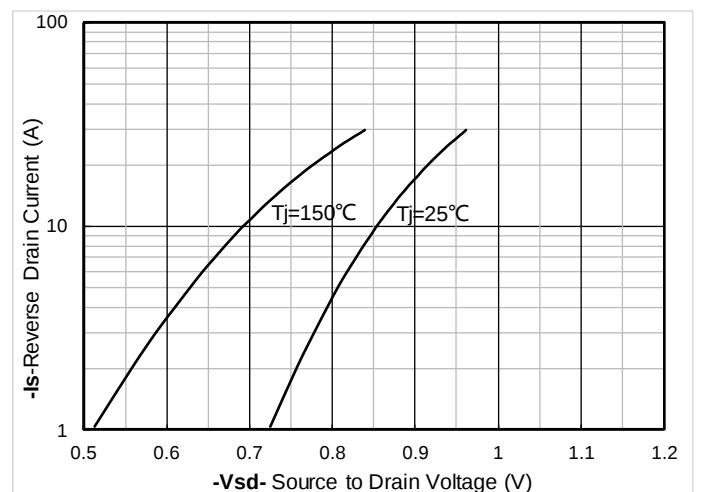


Figure11. Forward characteristics of reverse diode

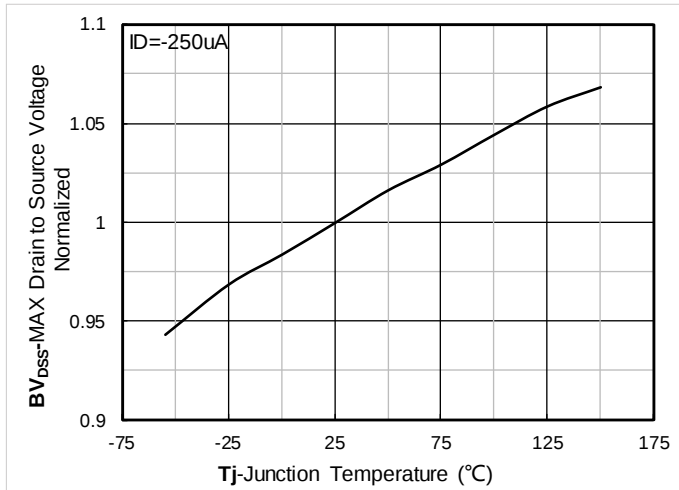


Figure12. Normalized breakdown voltage

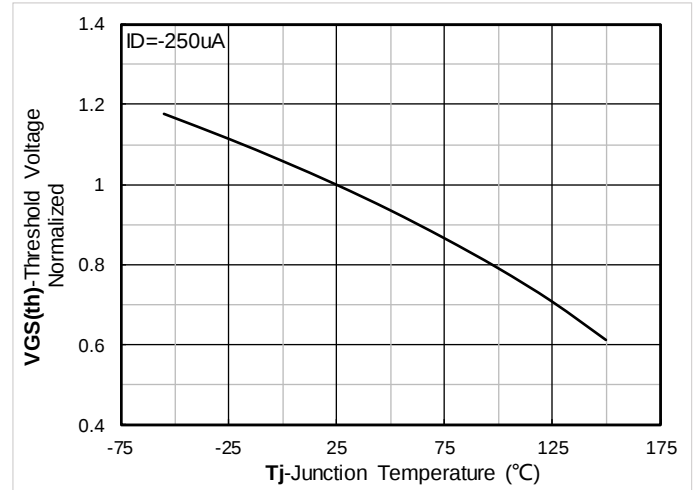


Figure13. Normalized Threshold voltage

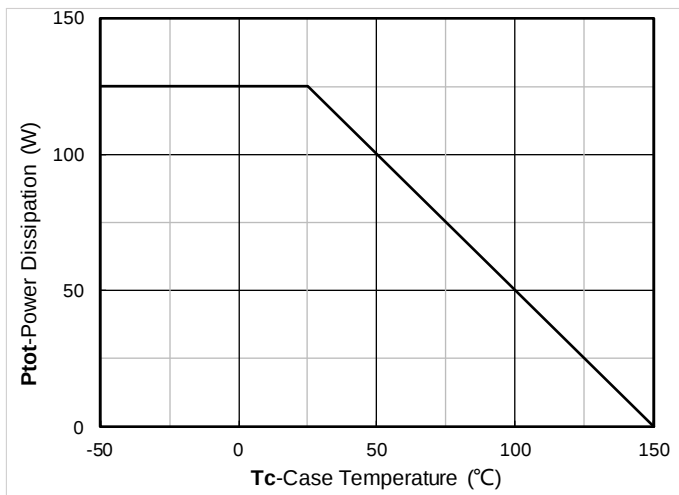
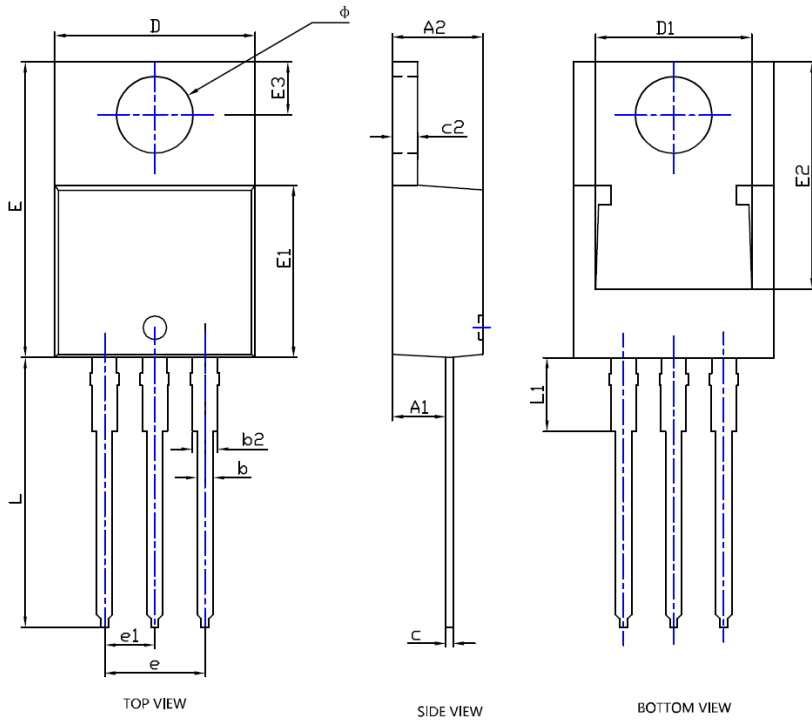


Figure14. Power dissipation



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■ TO-220AB-B Package information

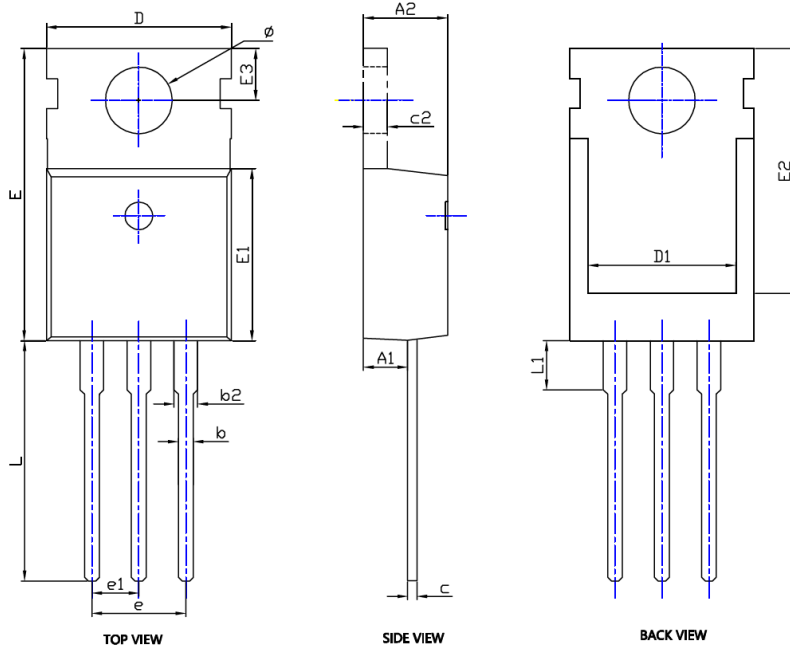


SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.098	0.102	0.106	2.480	2.580	2.680
A2	0.174	0.180	0.186	4.430	4.580	4.730
b	0.030	0.032	0.034	0.770	0.820	0.870
b2	0.048	0.050	0.052	1.230	1.280	1.330
c	0.013	0.015	0.018	0.330	0.390	0.450
c2	0.048	0.050	0.053	1.220	1.280	1.340
D	0.394	0.400	0.406	10.000	10.150	10.300
D1	0.299	0.311	0.323	7.600	7.900	8.200
E	0.581	0.587	0.593	14.750	14.900	15.050
E1	0.337	0.341	0.348	8.550	8.700	8.850
E2	0.441	0.453	0.465	11.200	11.500	11.800
E3	0.108BSC			2.750BSC		
e	0.200BSC			5.080BSC		
e1	0.100BSC			2.540BSC		
L	0.531	0.537	0.543	13.500	13.650	13.800
L1	0.152	0.157	0.163	3.850	4.000	4.150
φ	0.148	0.152	0.156	3.750	3.850	3.950

NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

■ TO-220AB-D Package information



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A1	0.091	0.098	2.300	2.500
A2	0.175	0.183	4.450	4.650
b	0.030	0.033	0.750	0.850
b2	0.048	0.052	1.220	1.320
c	0.018	0.022	0.450	0.550
c2	0.050	0.052	1.270	1.330
D	0.386	0.402	9.800	10.200
D1	0.303	0.327	7.700	8.300
E	0.614	0.630	15.600	16.000
E1	0.360	0.372	9.150	9.450
E2	0.510	0.533	12.950	13.550
E3	0.110BSC		2.800BSC	
e	0.200BSC		5.080BSC	
e1	0.100BSC		2.540BSC	
L	0.506	0.518	12.850	13.150
L1	0.093	0.117	2.360	2.960
φ	0.138	0.146	3.500	3.700

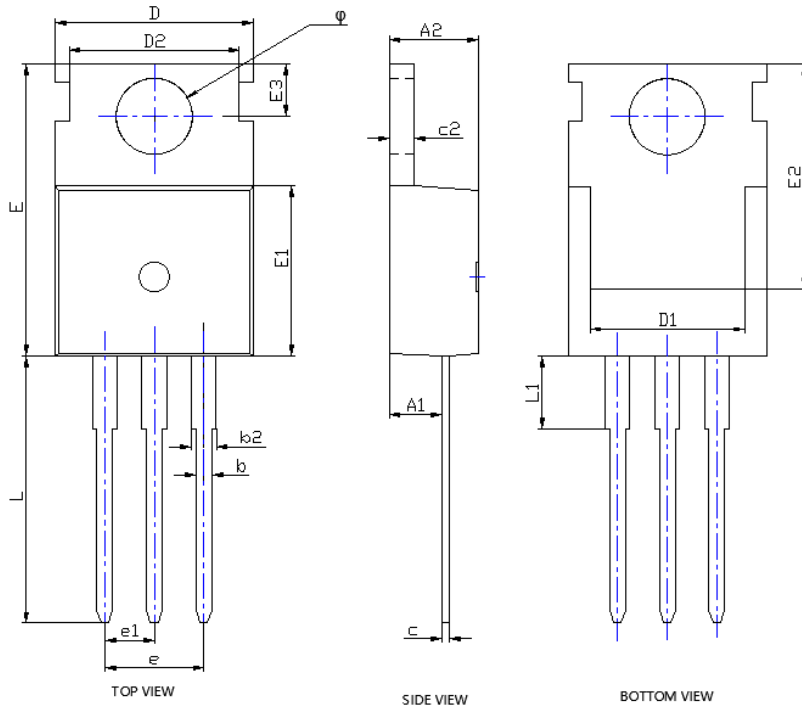
NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.



YJP30GP10A

■ TO-220AB-C Package information



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A1	0.091	0.098	2.300	2.500
A2	0.173	0.181	4.400	4.600
b	0.028	0.035	0.700	0.900
b2	0.049	0.056	1.250	1.420
c	0.018	0.022	0.450	0.550
c2	0.049	0.053	1.250	1.350
D	0.382	0.402	9.700	10.200
D1	0.295	0.331	7.500	8.400
D2	0.335	0.350	8.500	8.900
E	0.602	0.634	15.300	16.100
E1	0.358	0.366	9.100	9.300
E2	0.497	0.525	12.630	13.330
E3	0.108BSC		2.750BSC	
e	0.200BSC		5.080BSC	
e1	0.100BSC		2.540BSC	
L	0.512	0.531	13.000	13.500
L1	---	0.138	---	3.500
φ	0.140	0.148	3.550	3.750

NOTE:

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.

2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.



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