

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - case	R_{thJC}	-	-	4.1	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}	-	-	62	
SMD version, device on PCB:	R_{thJA}				
PG-TO252-3-1: @ min. footprint		-	-	75	
PG-TO252-3-1: @ 6 cm ² cooling area ²⁾		-	-	50	

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Diode forward voltage $I_F=4A, T_j=25^{\circ}C$ $I_F=4A, T_j=150^{\circ}C$	V_F	- -	1.7 2	1.9 2.4	V
Reverse current $V_R=600V, T_j=25^{\circ}C$ $V_R=600V, T_j=150^{\circ}C$	I_R	- -	15 40	200 1000	μA

⁰J-STD20 and JESD22

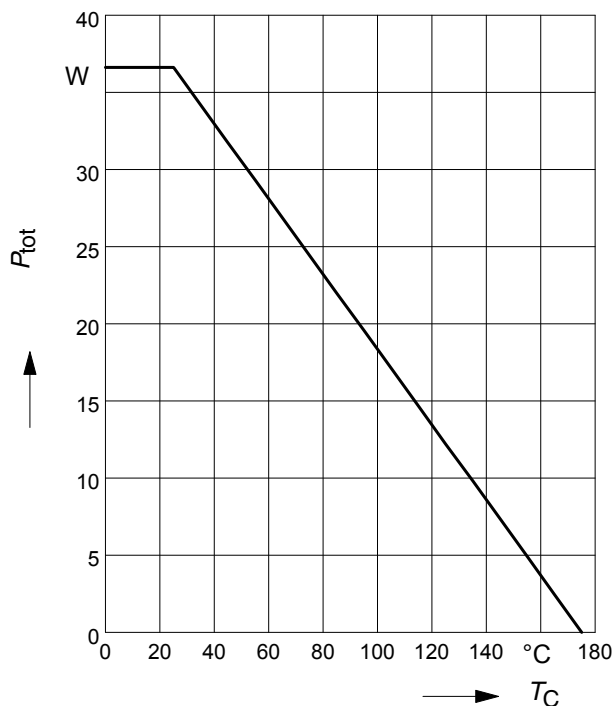
¹CCM, $V_{IN} = 85\text{VAC}$, $T_j = 150^\circ\text{C}$, $T_C = 100^\circ\text{C}$, $\eta = 93\%$, $\Delta I_{IN} = 30\%$
²Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6cm² (one layer, 70 μm thick) copper area for drain connection. PCB is vertical without blown air.

Electrical Characteristics, at $T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Total capacitive charge $V_R=400V, I_F=4A, di_F/dt=200A/\mu s, T_J=150^{\circ}C$	Q_C	-	13	-	nC
Switching time $V_R=400V, I_F=4A, di_F/dt=200A/\mu s, T_J=150^{\circ}C$	t_{rr}	-	n.a.	-	ns
Total capacitance $V_R=0V, T_C=25^{\circ}C, f=1MHz$ $V_R=300V, T_C=25^{\circ}C, f=1MHz$ $V_R=600V, T_C=25^{\circ}C, f=1MHz$	C	- - -	150 10 7	- - -	pF

1 Power dissipation

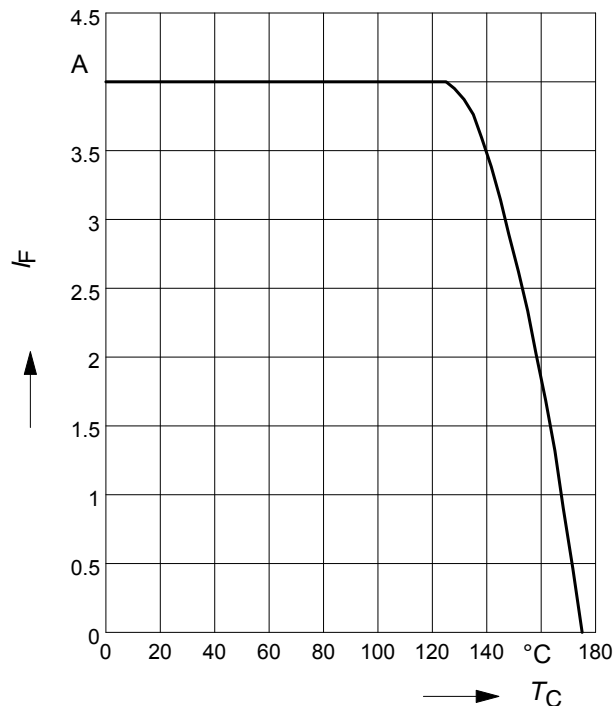
$$P_{\text{tot}} = f(T_C)$$



2 Diode forward current

$$I_F = f(T_C)$$

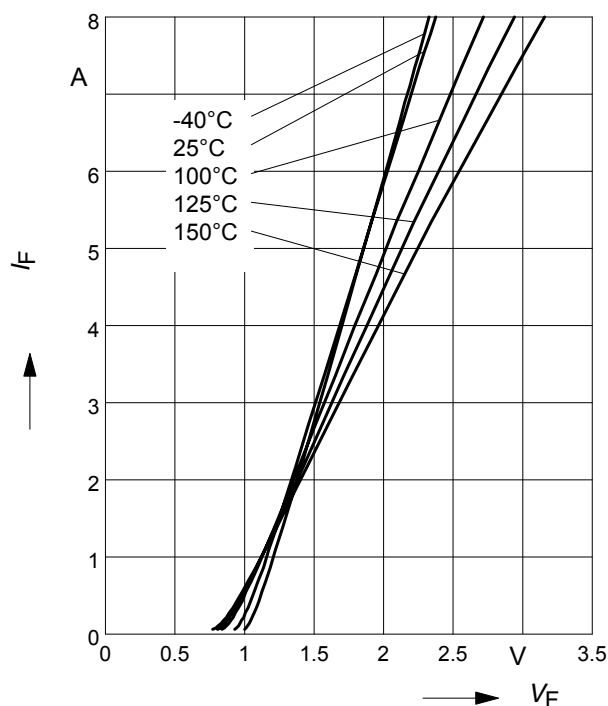
parameter: $T_j \leq 175^{\circ}\text{C}$



3 Typ. forward characteristic

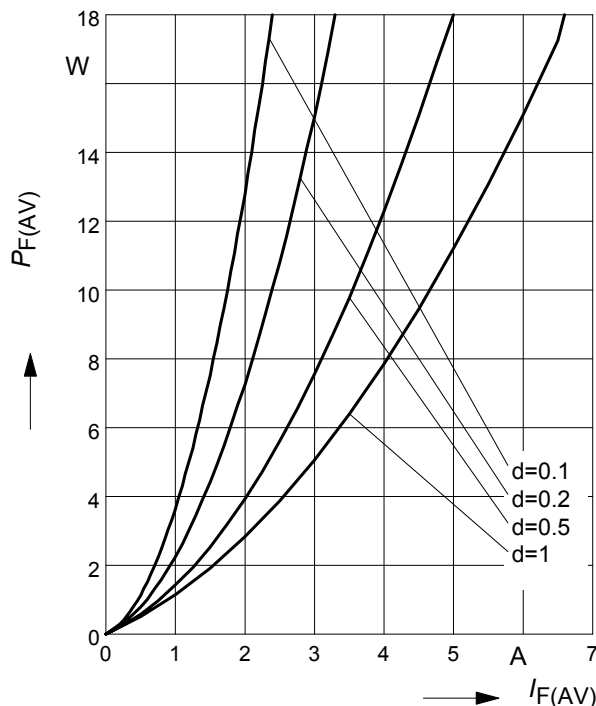
$$I_F = f(V_F)$$

parameter: T_j , $t_p = 350 \mu\text{s}$



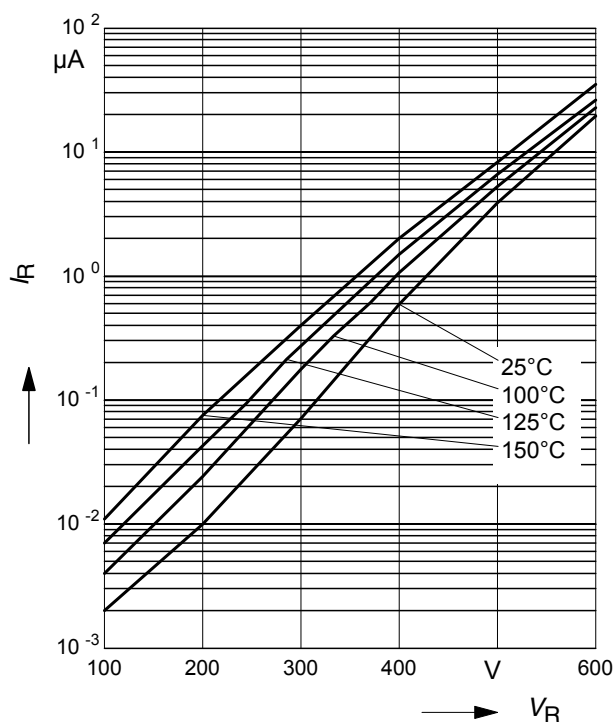
4 Typ. forward power dissipation vs. average forward current

$$P_{F(AV)} = f(I_F) \quad T_C = 100^{\circ}\text{C}, d = t_p / T$$



5 Typ. reverse current vs. reverse voltage

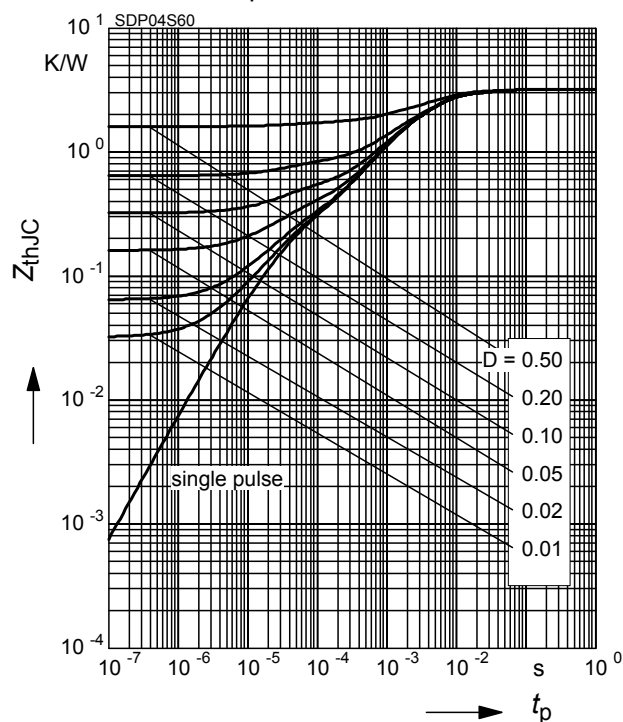
$$I_R = f(V_R)$$



6 Transient thermal impedance

$$Z_{thJC} = f(t_p)$$

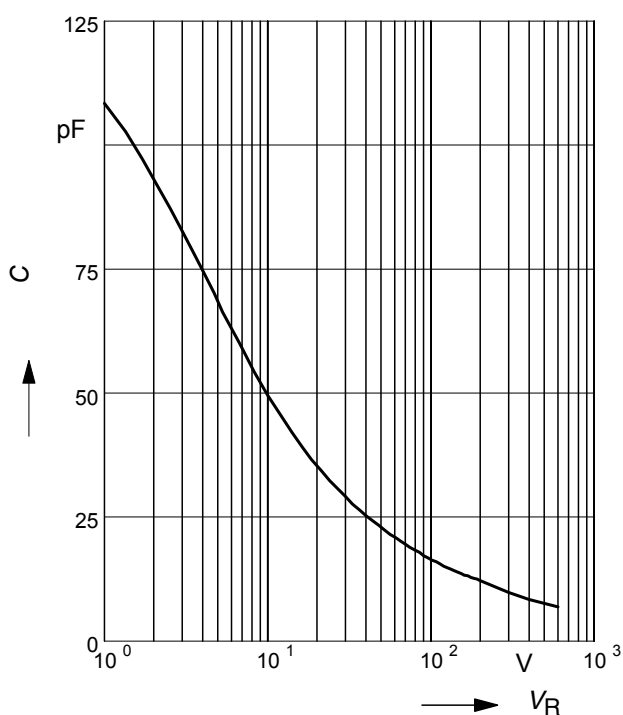
$$\text{parameter: } D = t_p/T$$



7 Typ. capacitance vs. reverse voltage

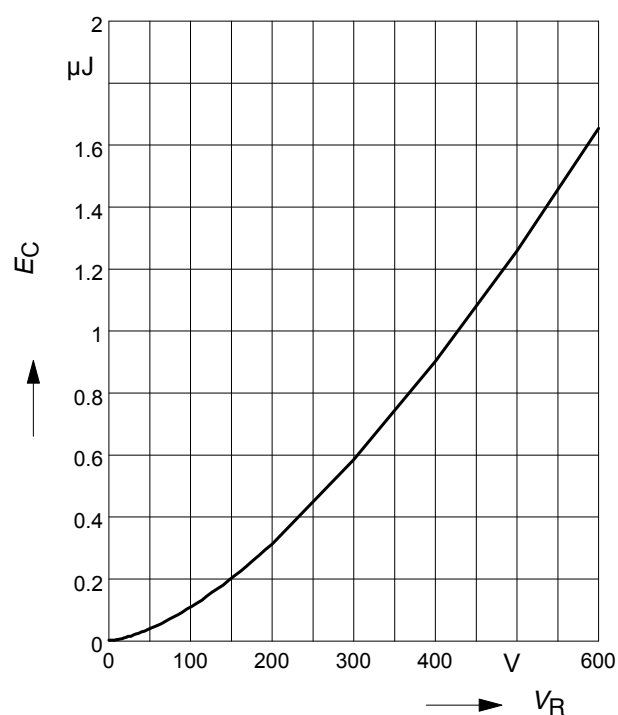
$$C = f(V_R)$$

parameter: $T_C = 25^\circ C$, $f = 1$ MHz



8 Typ. C stored energy

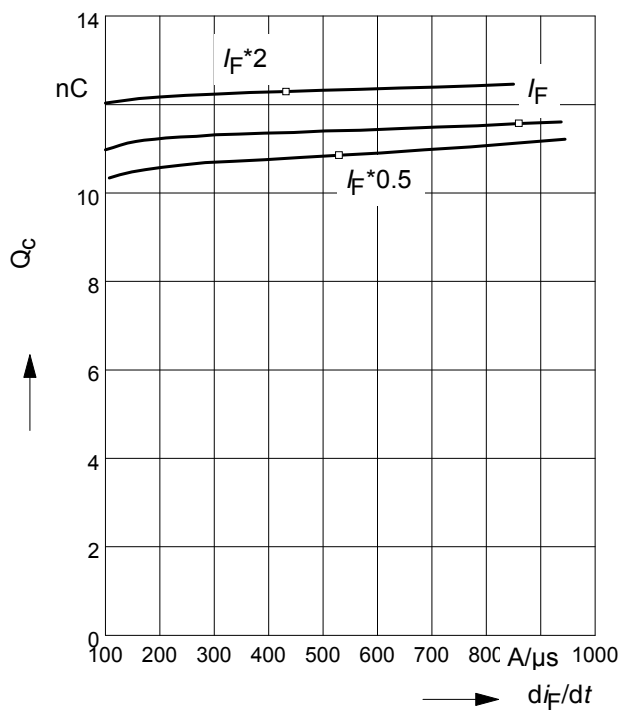
$$E_C = f(V_R)$$



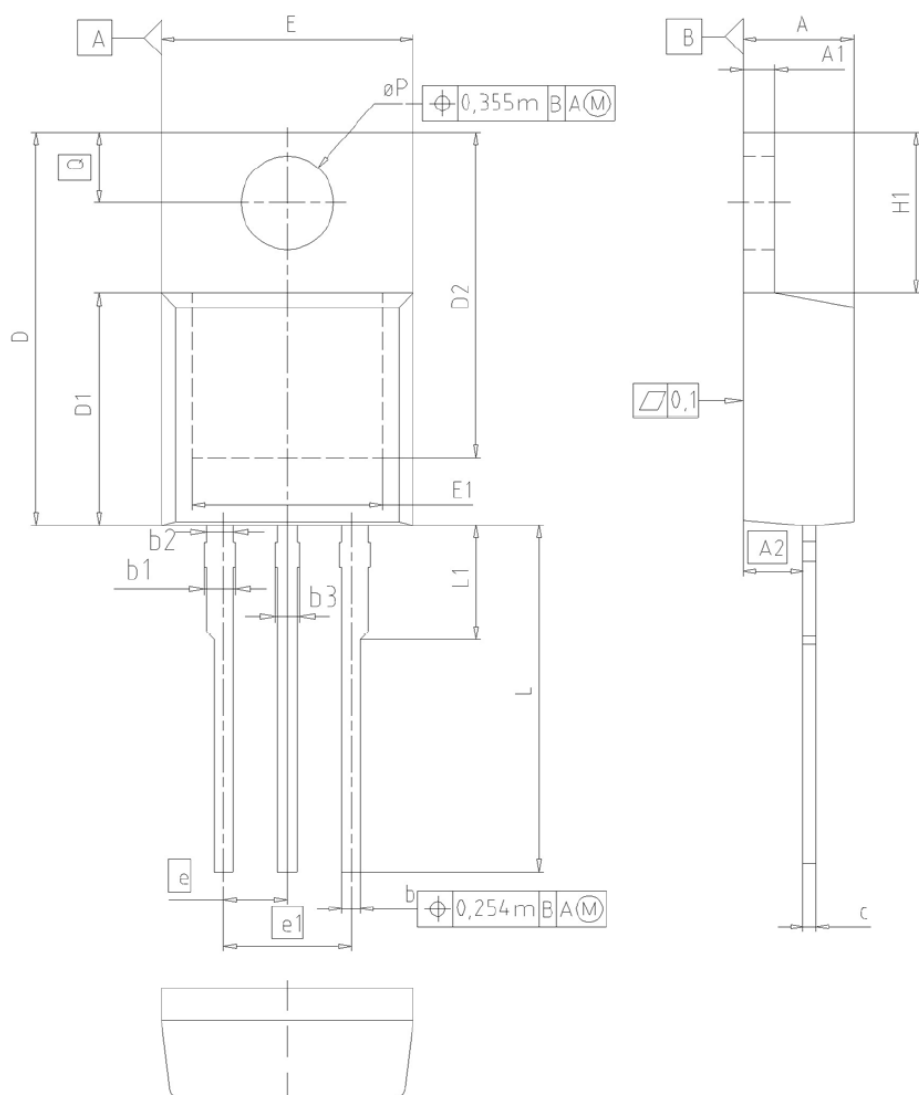
9 Typ. capacitive charge vs. current slope

$$Q_c = f(di_F/dt)$$

parameter: $T_j = 150\text{ }^{\circ}\text{C}$



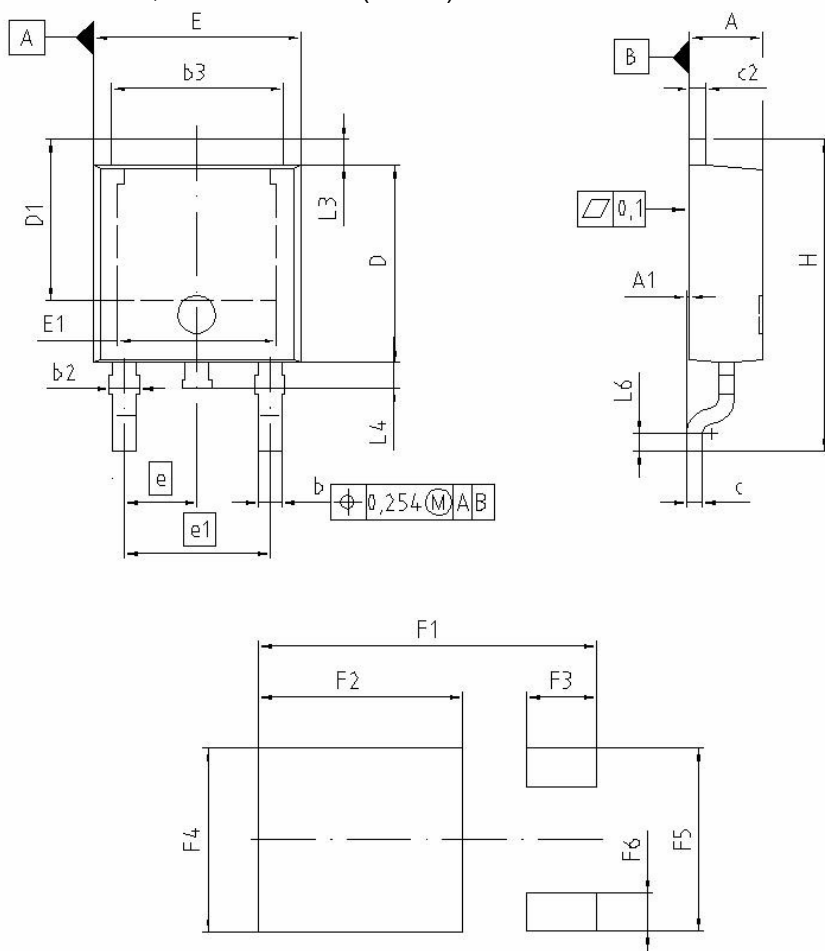
P-TO220-3-1, P-TO220-3-21



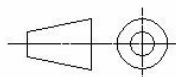
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.57	0.169	0.180
A1	1.17	1.40	0.046	0.055
A2	2.15	2.72	0.085	0.107
b	0.65	0.86	0.026	0.034
b1	0.95	1.40	0.037	0.055
b2	0.95	1.15	0.037	0.045
b3	0.65	1.15	0.026	0.045
c	0.33	0.60	0.013	0.024
D	14.81	15.95	0.583	0.628
D1	8.51	9.45	0.335	0.372
D2	12.19	13.10	0.480	0.516
E	9.70	10.36	0.382	0.408
E1	6.50	8.60	0.256	0.339
e	2.54		0.100	
e1	5.08		0.200	
N	3		3	
H1	5.90	6.90	0.232	0.272
L	13.00	14.00	0.512	0.551
L1	-	4.80	-	0.189
ØP	3.60	3.89	0.142	0.153
Q	2.60	3.00	0.102	0.118

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SCALE 0 2.5 5mm
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REVISION 05

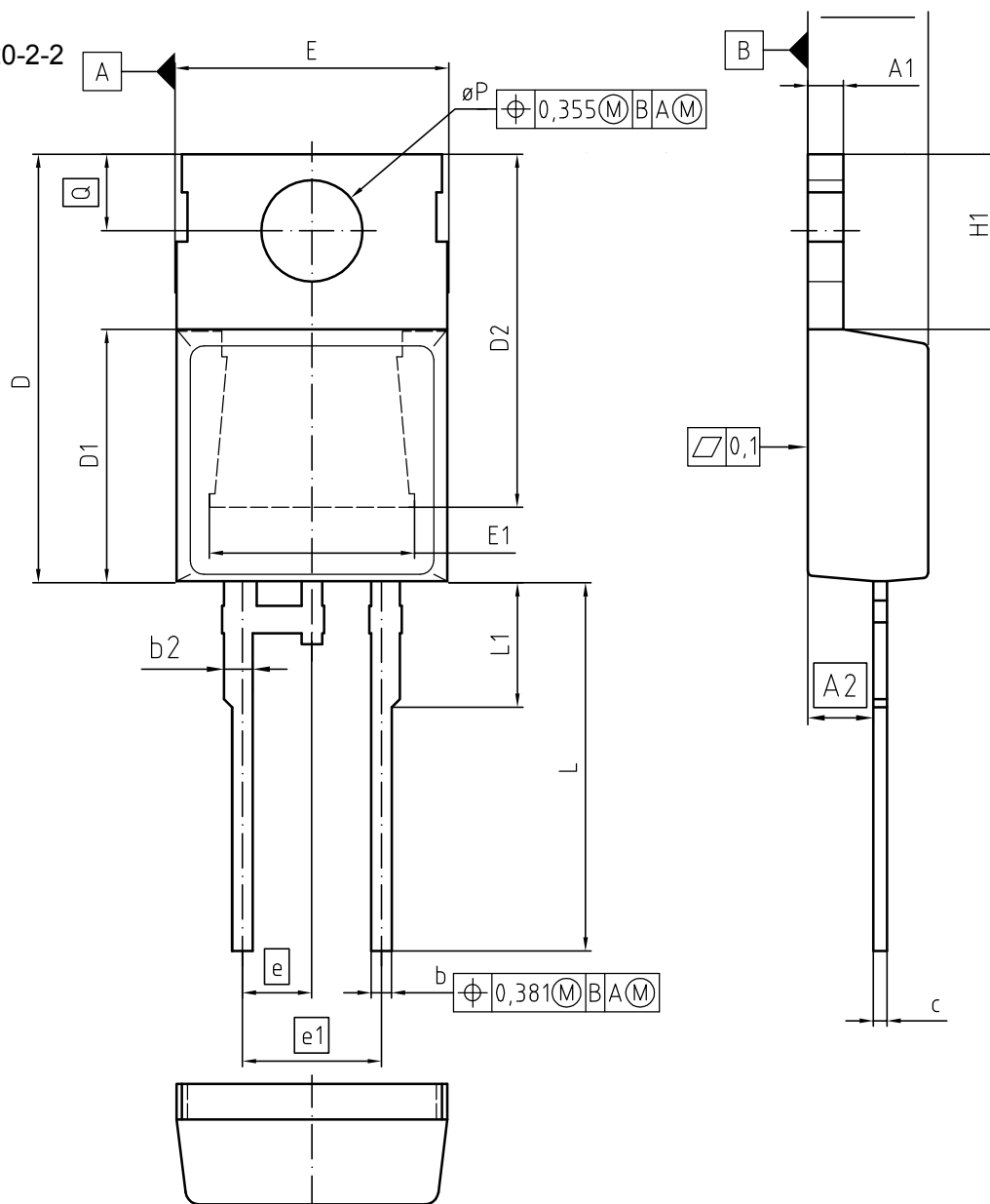
P-TO252-3-1, P-TO252-3-11, P-TO252-3-21 (D-Pak)



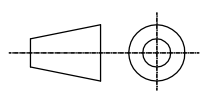
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.159	2.413	0.085	0.095
A1	0.000	0.150	0.000	0.006
b	0.635	0.889	0.025	0.035
b2	0.650	1.150	0.026	0.045
b3	5.004	5.500	0.197	0.217
c	0.457	0.580	0.018	0.023
c2	0.460	0.980	0.018	0.039
D	5.969	6.223	0.235	0.245
D1	5.020	5.842	0.198	0.230
E	6.400	6.731	0.252	0.265
E1	4.850	5.207	0.191	0.205
e	2.286		0.090	
e1	4.572		0.180	
N	3		3	
H	9.400	10.480	0.370	0.413
L3	0.900	1.143	0.035	0.045
L4	0.584	0.950	0.023	0.037
L6	0.510	0.686	0.020	0.027
F1	10.500	10.700	0.413	0.421
F2	6.300	6.500	0.248	0.256
F3	2.100	2.300	0.083	0.091
F4	5.700	5.900	0.224	0.232
F5	5.660	5.860	0.222	0.231
F6	1.100	1.300	0.043	0.051

REFERENCE JEDEC TO252
SCALE 0 2.0 4mm
EUROPEAN PROJECTION 
ISSUE DATE 21-09-2005
FILE TO252_1

PG-TO-220-2-2



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.191	4.699	0.165	0.185
A1	1.170	1.400	0.046	0.055
A2	2.215	2.718	0.087	0.107
b	0.635	0.889	0.025	0.035
b2	0.950	1.651	0.037	0.065
c	0.330	0.635	0.013	0.025
D	14.808	15.950	0.583	0.628
D1	8.509	9.450	0.335	0.372
D2	12.850	14.245	0.506	0.561
E	9.677	10.363	0.381	0.408
E1	6.500	8.788	0.256	0.346
e	2.540		0.100	
e1	5.080		0.200	
N	2		2	
H1	5.900	6.900	0.232	0.272
L	12.700	14.000	0.500	0.551
L1	3.048	4.800	0.120	0.189
øP	3.550	3.886	0.140	0.153
Q	2.540	3.048	0.100	0.120

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