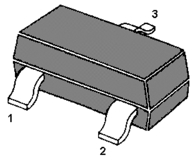
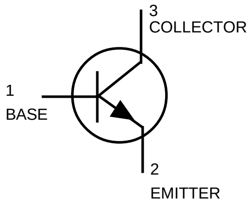
Driver Transistors

NPN Silicon



CASE 318–08, STYLE 6
SOT–23 (TO–236AB)



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	80	Vdc
Collector–Base Voltage	V_{CBO}	120	Vdc
Emitter–Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) T_A = 25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J , T_{stg}	–55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit

OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage (I_C = 4.0 mAdc)	$V_{(BR)CEO}$	80	—	Vdc
Collector–Base Breakdown Voltage (I_C = 100 µAdc)	$V_{(BR)CBO}$	120	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 100 µAdc)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current	I_{CBO}			nAdc
(V_{CB} = 90 Vdc)		—	0.1	
(T_A = 150°C)		—	500	
Emitter Cutoff Current (V_{EB} = 4.0Vdc)	I_{EBO}	—	200	nAdc

1. FR–5 = 1.0 x 0.75 x 0.062 in. 2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

Thermal Clad is a trademark of the Bergquist Company.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit

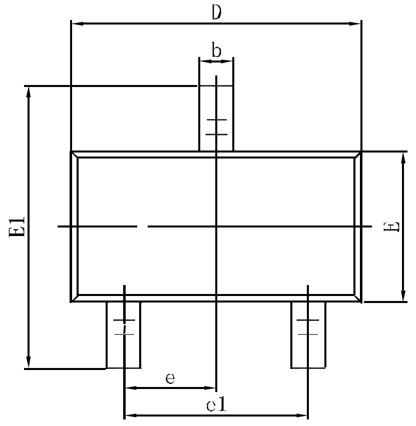
ON CHARACTERISTICS

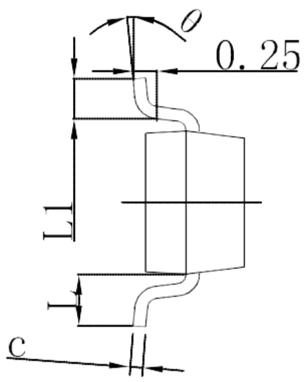
DC Current Gain (I_C = 10 mAdc, V_{CE} = 1.0 Vdc)	h_{FE}	20	—	—
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$			Vdc
(I_C = 4.0mAdc, I_B = 0.4 mAdc)		—	0.15	
(I_C = 50mAdc, I_B = 15 mAdc)		—	0.2	
Forward Base–Emitter Voltage	$V_{BE(sat)}$	—	—	—

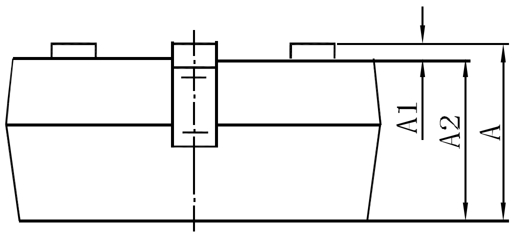
SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (I_C = 4.0 mAdc, V_{CE} = 10 Vdc, f = 20 MHz)	f_T	60	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, f = 1.0 MHz)	C_{ob}	—	20	pF

SOT-23 Package Outline Dimensions

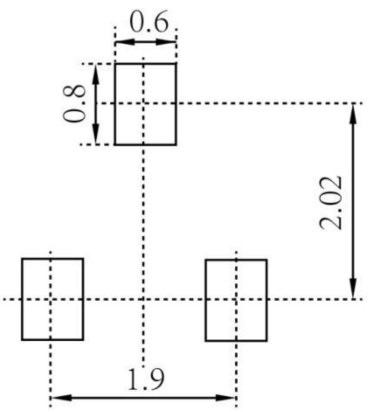






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1.Controlling dimension: in millimeters

2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only