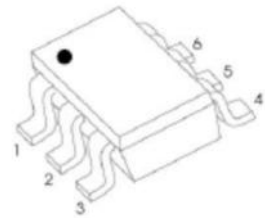
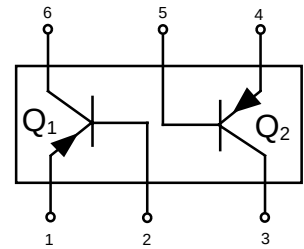




BC856/857/858 BDW/CDW Series

Dual General Purpose Transistors PNP Duals

These transistors are designed for general purpose amplifier applications. They are housed in the SOT-363 which is designed for low power surface mount applications.



SOT-363

MAXIMUM RATINGS

Rating	Symbol	BC856	BC857	BC858	Unit
Collector-Emitter Voltage	V_{CEO}	-65	-45	-30	V
Collector-Base Voltage	V_{CBO}	-80	-50	-30	V
Emitter-Base Voltage	V_{EBO}	-5.0	-5.0	-5.0	V
Collector Current -Continuous	I_C	-100	-100	-100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation	P_D	380	mW
Per Device		250	mW
FR- 5 Board, (1) $T_A = 25^\circ\text{C}$			
Derate above 25°C		3.0	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	328	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

1. FR-5 = 1.0 x 0.75 x 0.062 in.

Marking:

BC856BDW : 56B
BC857BDW : 57B
BC857CDW : 57C
BC858BDW : 58B
BC858CDW : 58C



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage ($I_C = -10\text{ mA}$)	$V_{(BR)CEO}$				V
BC856 Series		-65	—	—	
BC857 Series		-45	—	—	
BC858 Series		-30	—	—	
Collector–Emitter Breakdown Voltage ($I_C = -10\text{ }\mu\text{A}$, $V_{EB} = 0$)	$V_{(BR)CES}$				V
BC856 Series		-80	—	—	
BC857 Series		-50	—	—	
BC858 Series		-30	—	—	
Collector–Base Breakdown Voltage ($I_C = -10\text{ }\mu\text{A}$)	$V_{(BR)CBO}$				V
BC856 Series		-80	—	—	
BC857 Series		-50	—	—	
BC858 Series		-30	—	—	
Emitter–Base Breakdown Voltage ($I_E = -1.0\text{ }\mu\text{A}$)	$V_{(BR)EBO}$				V
BC856 Series		-5.0	—	—	
BC857 Series		-5.0	—	—	
BC858 Series		-5.0	—	—	
Collector Cutoff Current ($V_{CB} = -30\text{ V}$)	I_{CBO}	—	—	-15	nA
($V_{CB} = -30\text{ V}$, $T_A = 150^\circ\text{C}$)		—	—	-4.0	μA

ON CHARACTERISTICS

DC Current Gain ($I_C = -10\text{ }\mu\text{A}$, $V_{CE} = -5.0\text{ V}$)	h_{FE}				—
BC856B, BC857B, BC858B		—	150	—	
BC857C, BC858C		—	270	—	
($I_C = -2.0\text{ mA}$, $V_{CE} = -5.0\text{ V}$)					
BC856B, BC857B, BC858B		220	290	475	
BC857C, BC858C		420	520	800	
Collector–Emitter Saturation Voltage ($I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$)	$V_{CE(sat)}$	—	—	-0.3	V
($I_C = -100\text{ mA}$, $I_B = -5.0\text{ mA}$)		—	—	-0.65	
Base–Emitter Saturation Voltage ($I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$)	$V_{BE(sat)}$	—	-0.7	—	V
($I_C = -100\text{ mA}$, $I_B = -5.0\text{ mA}$)		—	-0.9	—	
Base–Emitter Voltage ($I_C = -2.0\text{ mA}$, $V_{CE} = -5.0\text{ V}$)	$V_{BE(on)}$	-0.5	—	-0.75	V
($I_C = -10\text{ mA}$, $V_{CE} = -5.0\text{ V}$)		—	—	-0.82	

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product ($I_C = -10\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	100	—	—	MHz
Output Capacitance ($V_{CB} = -10\text{ V}$, $f = 1.0\text{ MHz}$)	C_{obo}	—	—	4.5	pF
Noise Figure ($I_C = -0.2\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$, $BW = 200\text{ Hz}$)	NF	—	—	10	dB



TYPICAL PNP CHARACTERISTICS — BC856

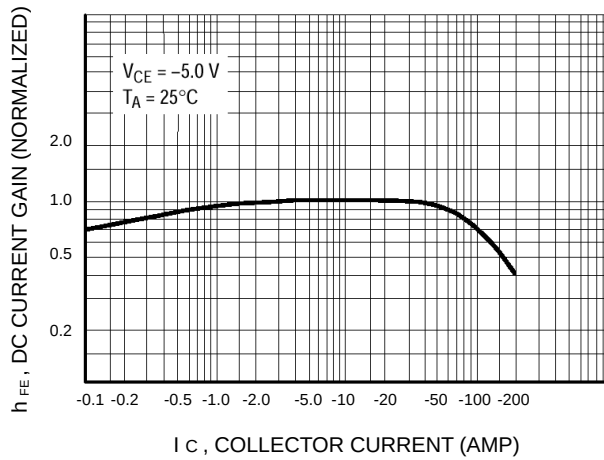


Figure 1. DC Current Gain

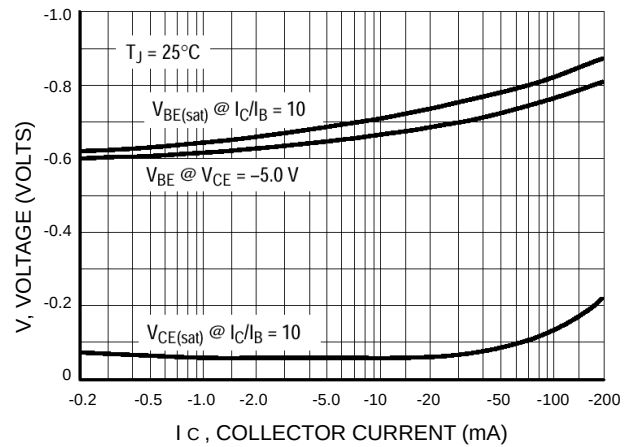


Figure 2. "On" Voltage

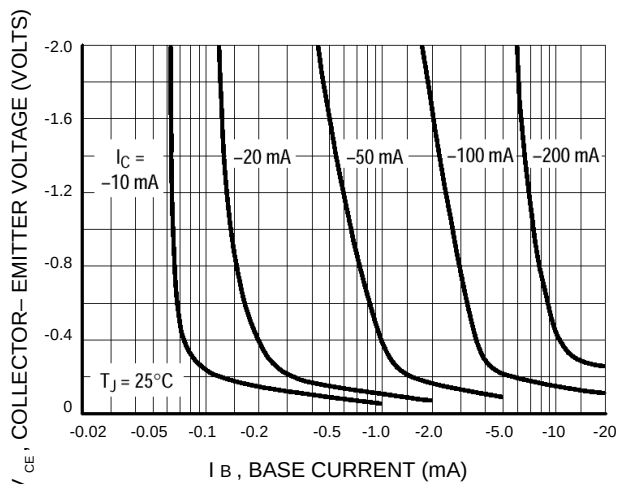


Figure 3. Collector Saturation Region

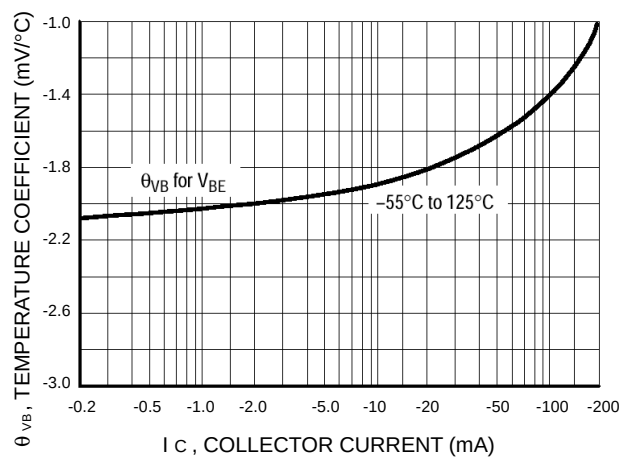


Figure 4. Base-Emitter Temperature Coefficient

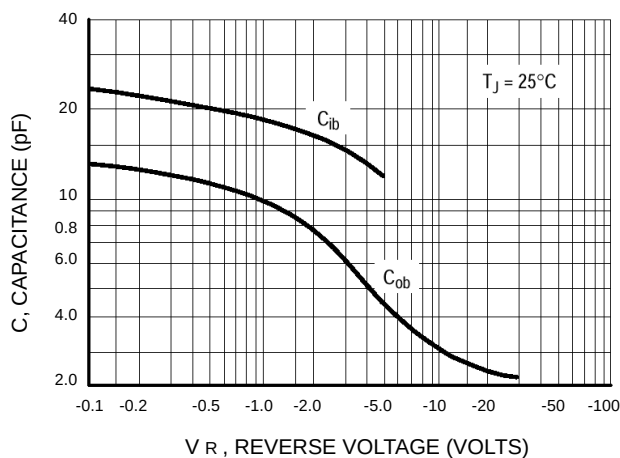


Figure 5. Capacitance

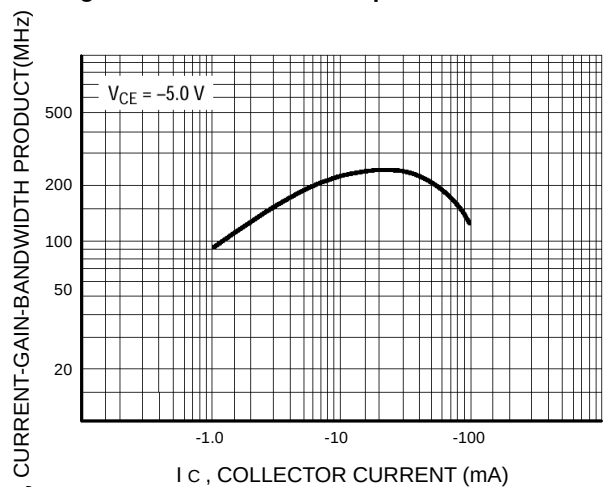


Figure 6. Current-Gain - Bandwidth Product



TYPICAL PNP CHARACTERISTICS — BC857/BC858

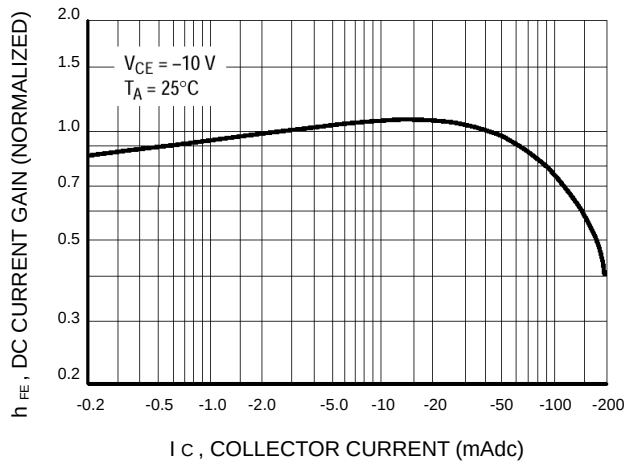


Figure 7. Normalized DC Current Gain

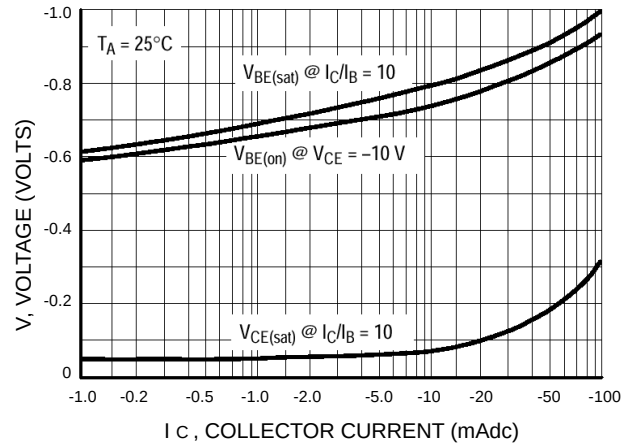


Figure 8. "Saturation" and "On" Voltages

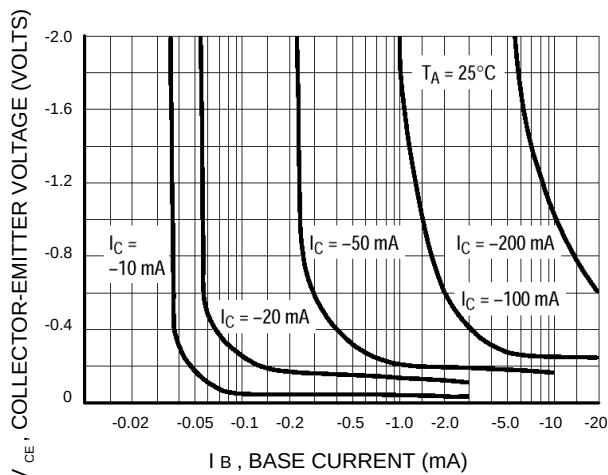


Figure 9. Collector Saturation Region

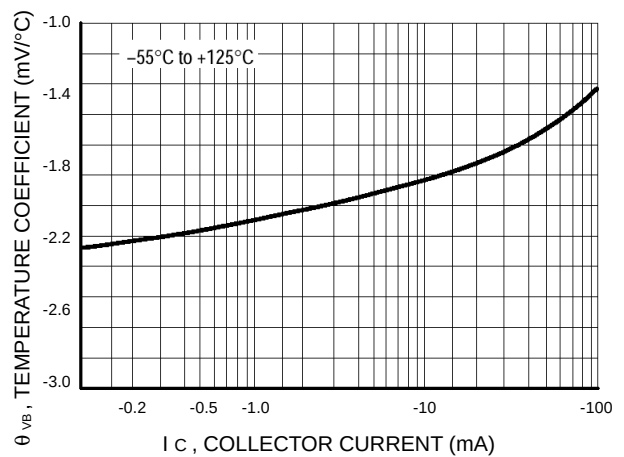


Figure 10. Base-Emitter Temperature Coefficient

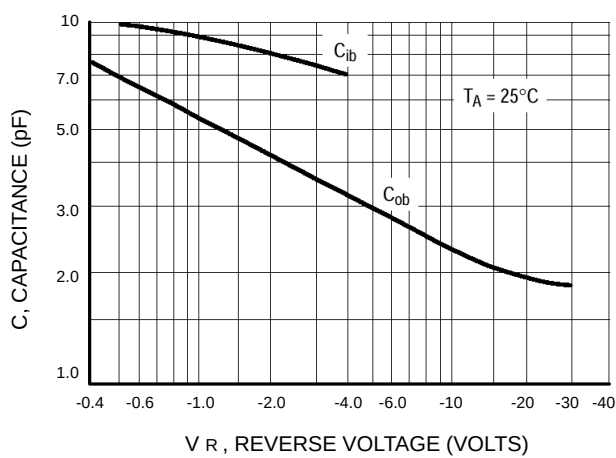


Figure 11. Capacitance

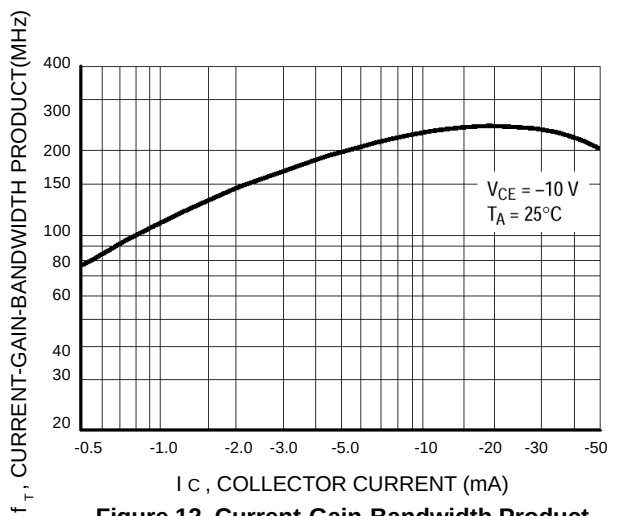


Figure 12. Current-Gain-Bandwidth Product

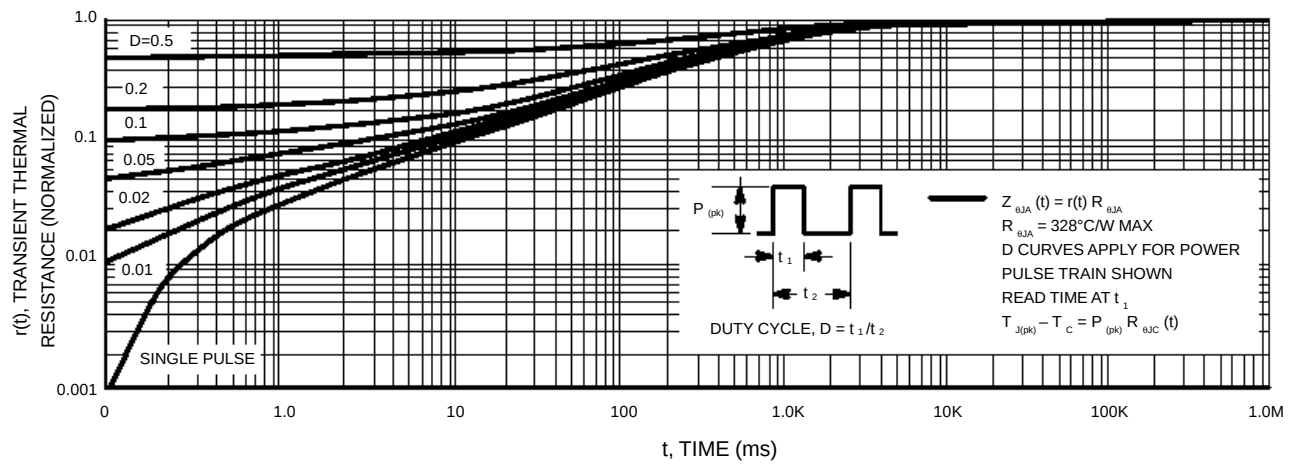


Figure 13. Thermal Response

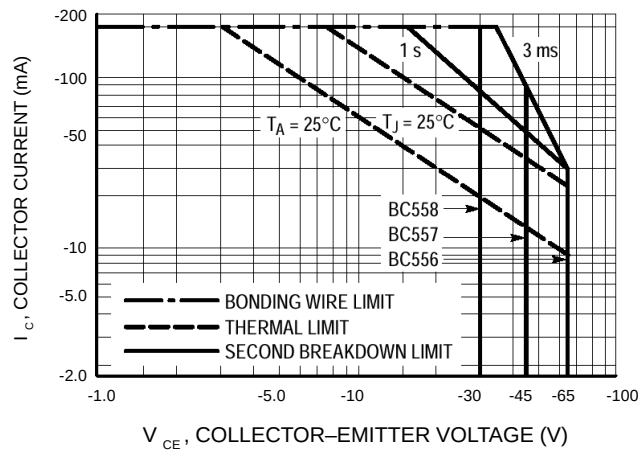


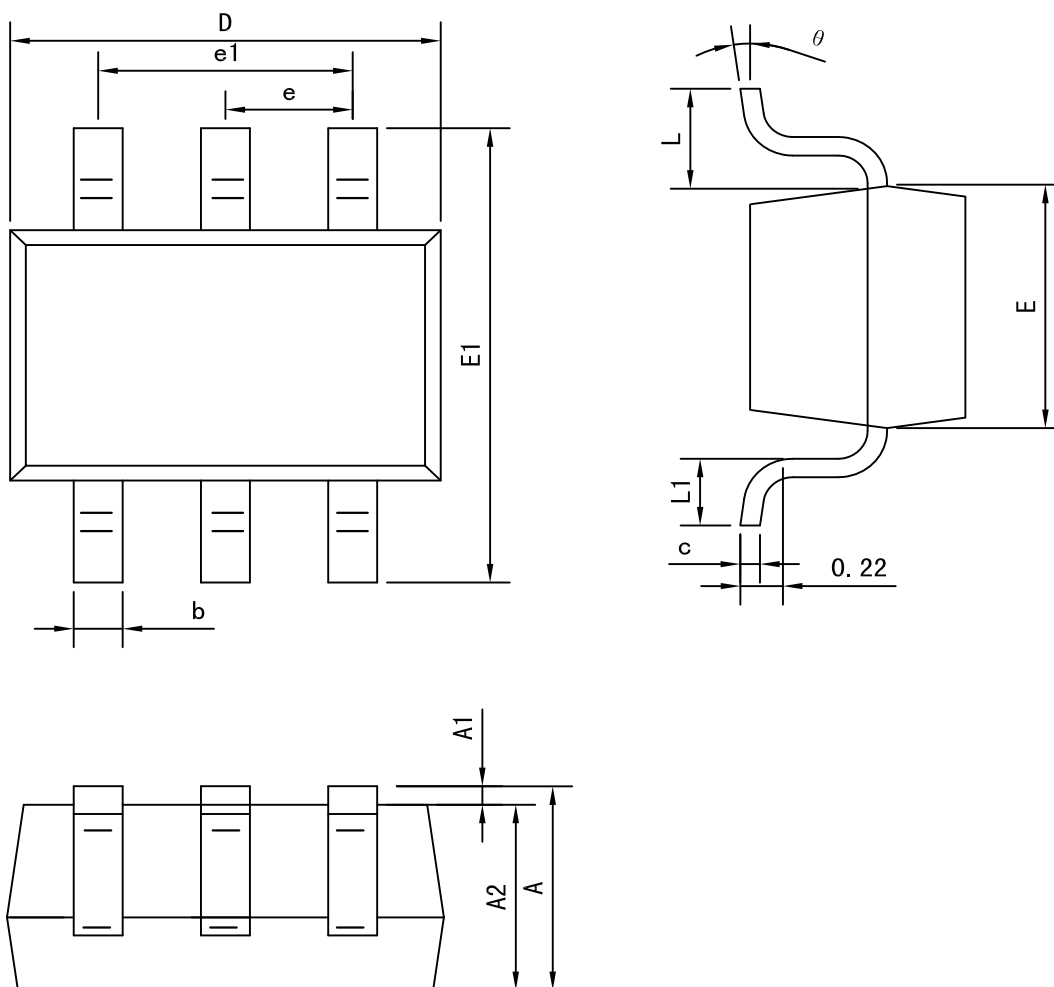
Figure 14. Active Region Safe Operating Area

The safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

The data of Figure 14 is based upon $T_{J(pk)} = 150^\circ\text{C}$; T_C or T_A is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^\circ\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 13. At high case or ambient temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by the secondary breakdown.



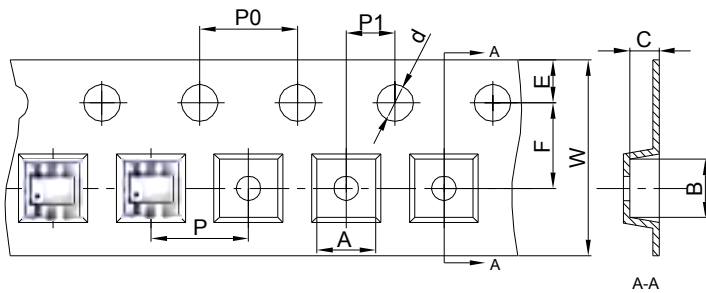
SOT-363 Package outline dimensions



Symbol	Dimension in Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP	
e1	1.200	1.400
L	0.525 REF	
L1	0.260	0.460
θ	0°	8°



SOT-363 Embossed Carrier Tape



Packaging Description:

SOT-363 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-363	2.25	2.55	1.20	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-363 Tape Leader and Trailer

