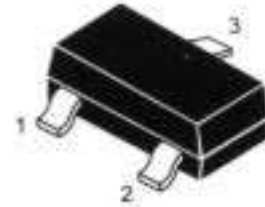




SURFACE MOUNT SMALL SIGNAL TRANSISTORS

- * Epitaxial Die Construction
- * Ideally Suited Automatic Insertion
- * 310mW Power Dissipation
- * Complementary PNP types Available(BC846-BC848)
- * For Switching and AF Amplifier Applications

Package:SOT-23



ABSOLUTE MAXIMUM RATINGS at Ta=25°C

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	BC856	-80	V
	BC857	-50	
	BC858	-30	
Collector-Emitter Voltage	BC856	-65	V
	BC857	-45	
	BC858	-30	
Emitter-Base Voltage	BC856	-5.0	V
	BC857	-5.0	
	BC858	-5.0	
Collector Current	Ic	-100	mA
Collector Dissipation Ta=25°C *	P _D	310	mW
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-65-150	°C

PIN:	1	2	3
STYLE			
NO.1	B	E	C

ELECTRICAL CHARACTERISTICS at Ta=25°C

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BC856	-80			V	Ic=-10uA Ie=0
	BC857	-50				
	BC858	-30				
Collector-Emitter Breakdown Voltage	BC856	-65			V	Ic= -10mA Ib=0
	BC857	-45				
	BC858	-30				
Emitter-Base Breakdown Voltage	BVebo	-5			V	Ie= -1.uA Ic=0



ELECTRICAL CHARACTERISTICS at Ta=25°C (CONTINUED)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
DC Current Gain	H_{FE}		90			$V_{ce} = -5.0V$ $I_c = -10\mu A$ $V_{ce} = -5.0V$ $I_c = -2.0mA$
Current Gain Group A						
B			150			
C			270			
Current Gain Group A		125	180	250		
B		220	290	475		
C		420	520	800		
Collector-Emitter Saturation Voltage	$V_{ce(sat)}$			-300 -650	mV mV	$I_c = -10mA$ $I_b = -0.5mA$ $I_c = -100mA$ $I_b = -5.0mA$
Base-Emitter Saturation Voltage	$V_{be(sat)}$		-700 -900		mV	$I_c = -10mA$ $I_b = -0.5mA$ $I_c = -100mA$ $I_b = -5.0mA$
Base-Emitter Voltage	$V_{be(on)}$	-600		-750 -820	mV	$V_{ce} = -5.0V$ $I_c = -2.0mA$ $V_{ce} = -5.0V$ $I_c = -10mA$
Output Capacitance	C_{ob}		3.5	6.0	PF	$V_{cb} = -10V$ $f = 1MHz$
Gain Bandwidth Product	f_T		100		MHz	$V_{ce} = -5V$ $I_c = -10mA$ $f = 100MHz$
Noise Figure	NF			10	dB	$V_{ce} = -5V$ $I_c = -200\mu A$ $R_s = 2K\Omega$ $f = 1MHz$ $\Delta f = 200Hz$

* Total Device Dissipation : FR=1x0.75x0.062in Board, Derate 25°C.

Pulse Test : Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$

DEVICE MARKING:

BC856A=3A

BC856B=3B

BC857A=3E

BC857B=3F

BC857C=3G

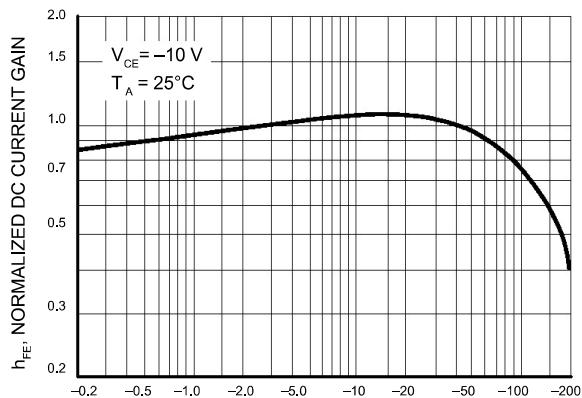
BC858A=3J

BC858B=3K

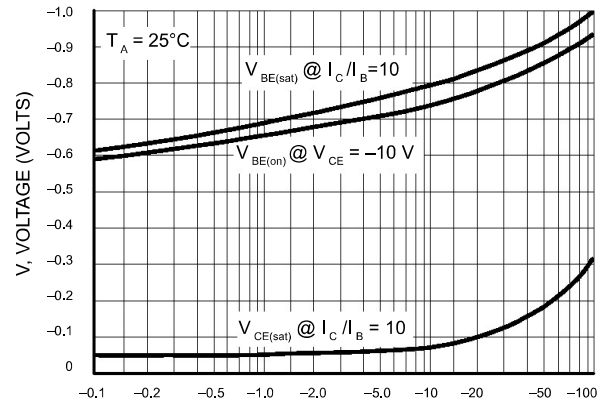
BC858C=3L



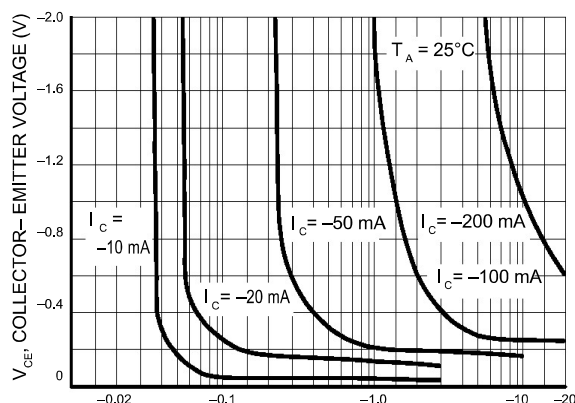
BC857/BC858



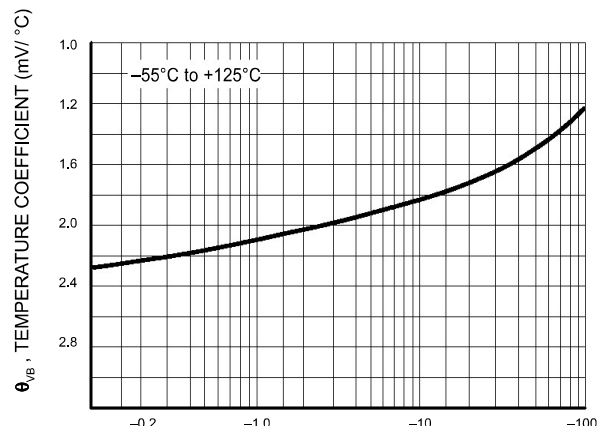
I_C , COLLECTOR CURRENT (mAdc)
Figure 1. Normalized DC Current Gain



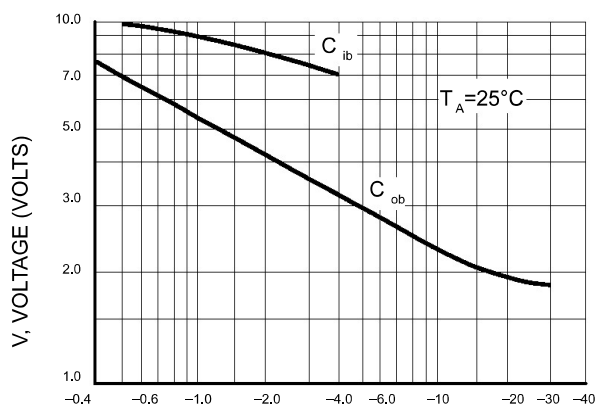
I_C , COLLECTOR CURRENT (mAdc)
Figure 2. "Saturation" and "On" Voltages



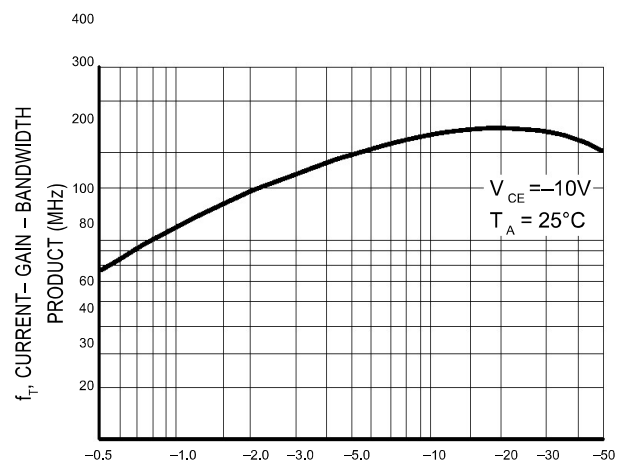
I_B , BASE CURRENT (mA)
Figure 3. Collector Saturation Region



I_C , COLLECTOR CURRENT (mA)
Figure 4. Base-Emitter Temperature Coefficient



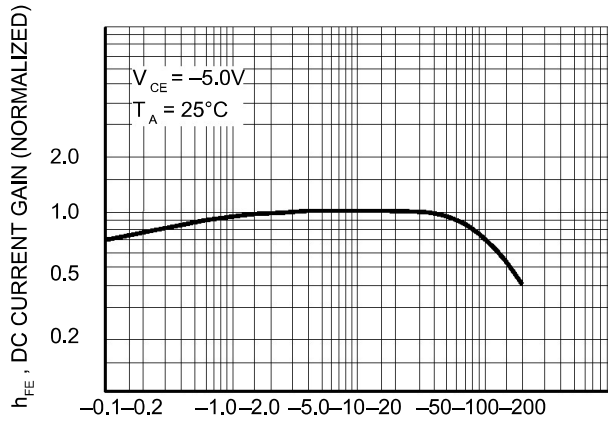
V_R , REVERSE VOLTAGE (VOLTS)
Figure 5. Capacitances



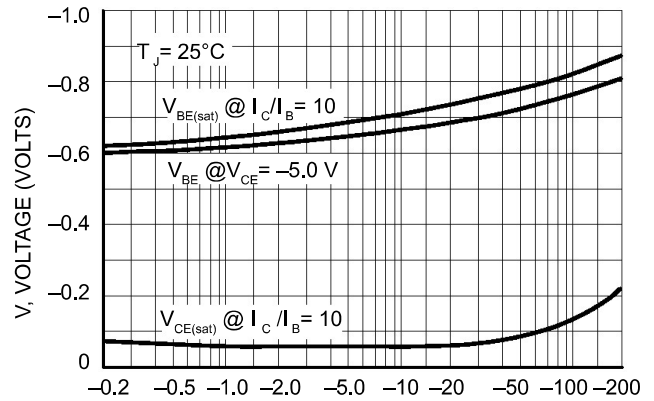
I_C , COLLECTOR CURRENT (mAdc)
Figure 6. Current-Gain - Bandwidth Product



BC856



I_C , COLLECTOR CURRENT (mA)
Figure 7. DC Current Gain



I_C , COLLECTOR CURRENT (mA)
Figure 8. "On" Voltage

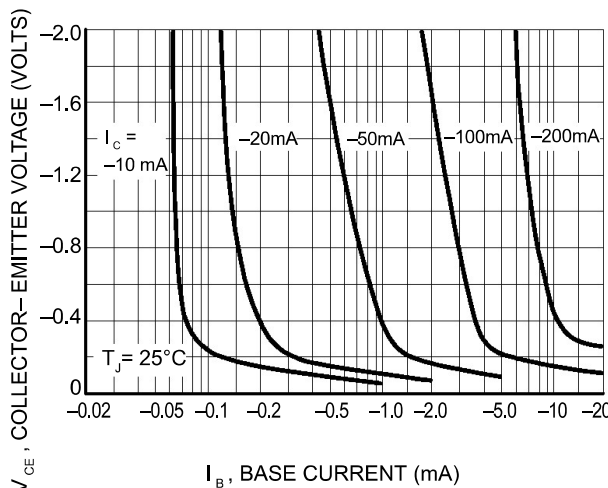


Figure 9. Collector Saturation Region

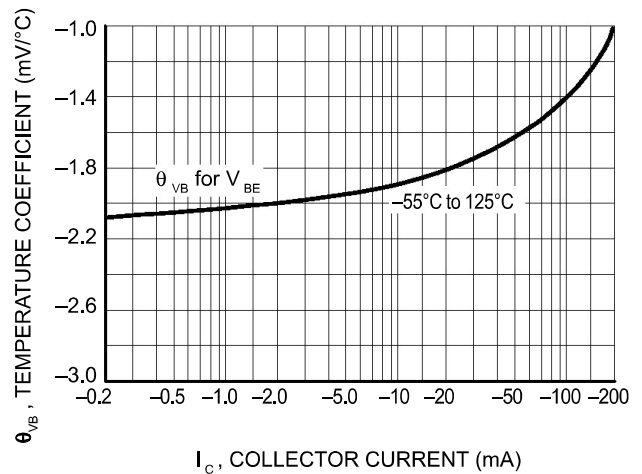


Figure 10. Base-Emitter Temperature Coefficient

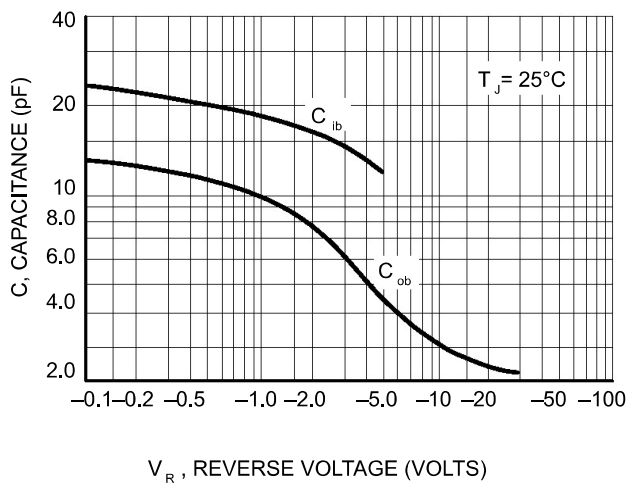


Figure 11. Capacitance

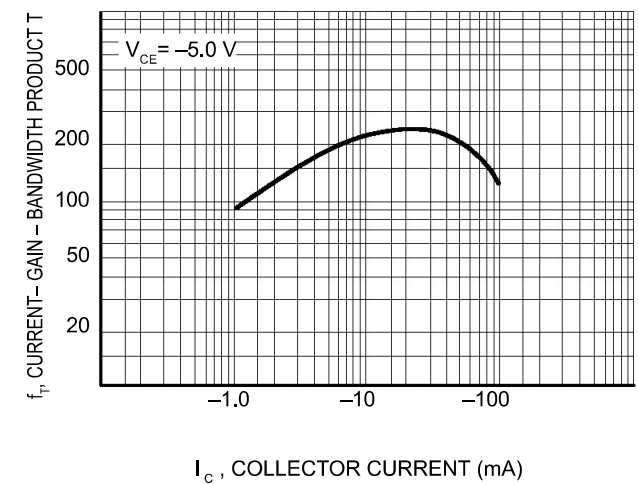


Figure 12. Current-Gain – Bandwidth Product



BC856A-BC858C

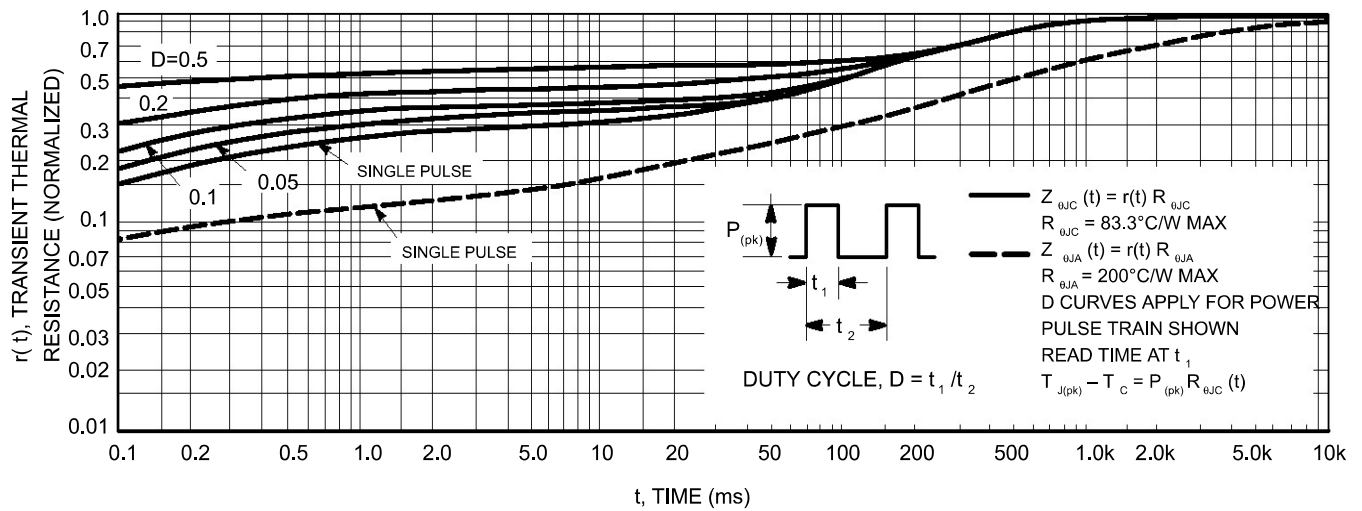


Figure 13. Thermal Response

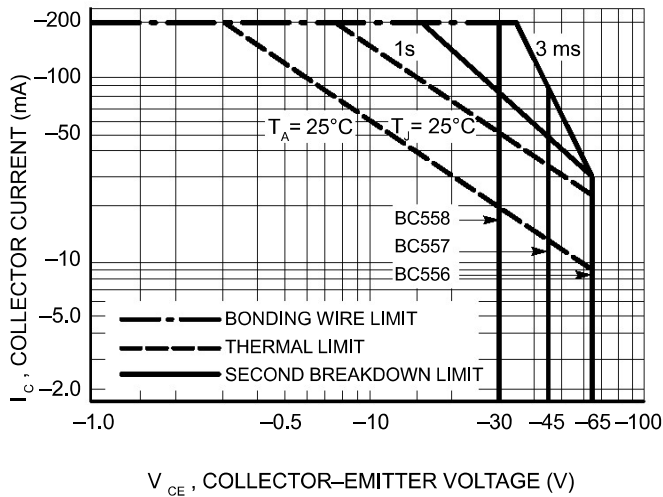


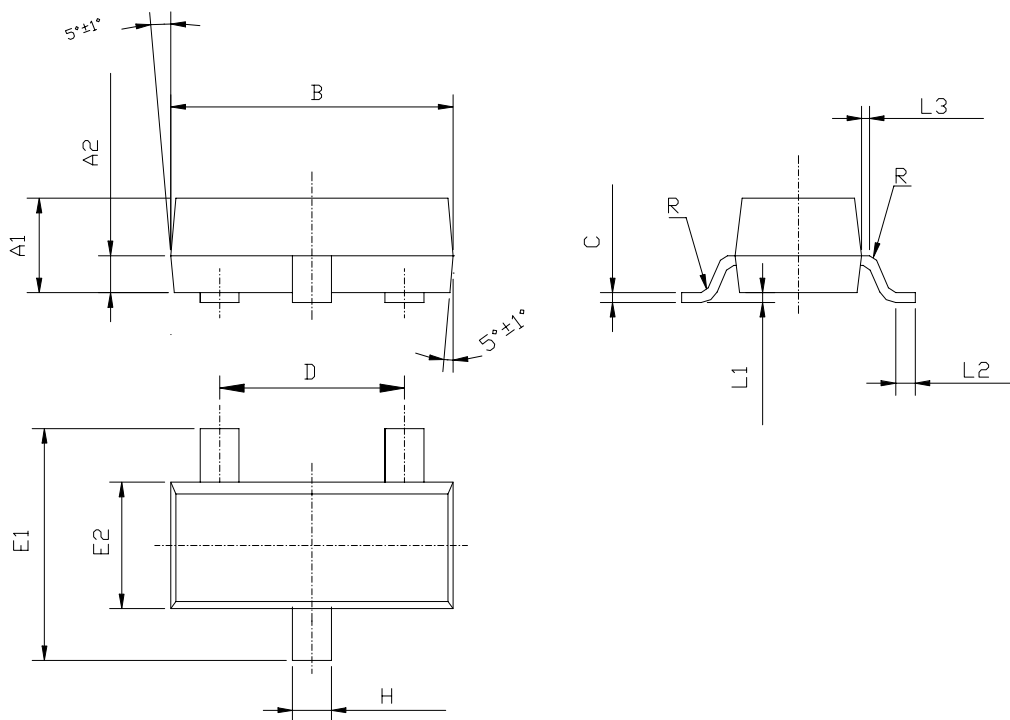
Figure 14. Active Region Safe Operating Area



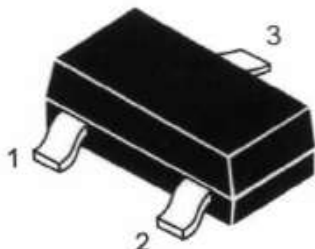
SEMICONDUCTOR
TECHNICAL DATA

外型尺寸及内部结构图

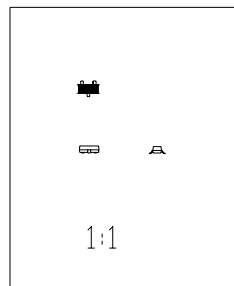
OUTSIDE DEMENSION AND INTERNAL CONFIGURATION (SOT-23)



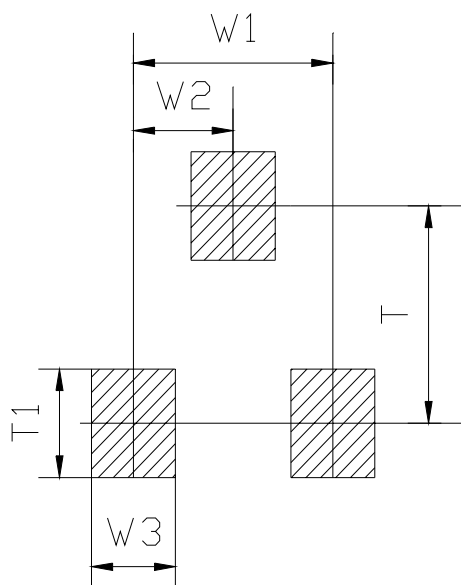
Symbol	Dimensions in Millimeters			内部结构 STYLS	管脚 PIN		
	Min	Nominal	Max		1 脚	2 脚	3 脚
A1	0.900	0.970	1.000	6	基极 BASE	发射极 EMITTER	集电极 COLLCTOR
A2	0.350	0.380	0.410				
B	2.800	2.900	3.000	8	阳极 ANODE	不连接 NO- CONNECTION	阴极 CATHODE
C	0.085	0.100	0.150				
D	1.800	1.900	2.000	9	阳极 ANODE	阳极 ANODE	阴极 CATHODE
E1	2.200	2.400	2.600				
E2	1.200	1.300	1.400	11	阳极 ANODE	阴极 CATHODE	阳极-阴极 ANODE-CATHODE
H	0.300	0.400	0.500				
L1	0.000		0.100	12	阴极 CATHODE	阴极 CATHODE	阳极 ANODE
L2	0.200						
L3	0.030	0.080	0.130	18	不连接 NO- CONNECTION	阴极 CATHODE	阳极 ANODE
R	0.080TYP						
				19	阴极 CATHODE	阳极 ANODE	阴极-阳极 CATHODE-ANODE



OUTSIDE



Scale 1:1 on letter size paper

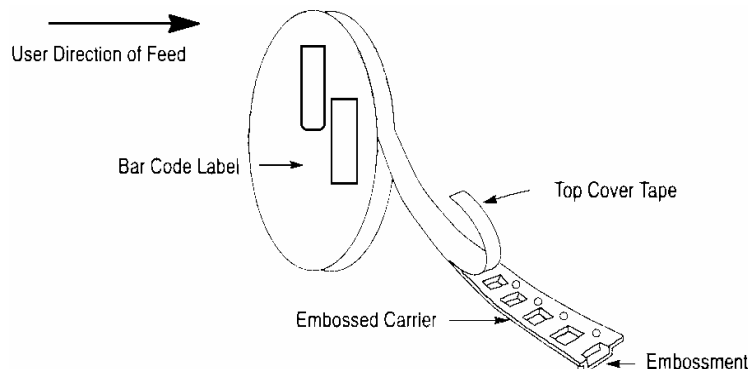


FOOTPRINTS FOR SOLDERING

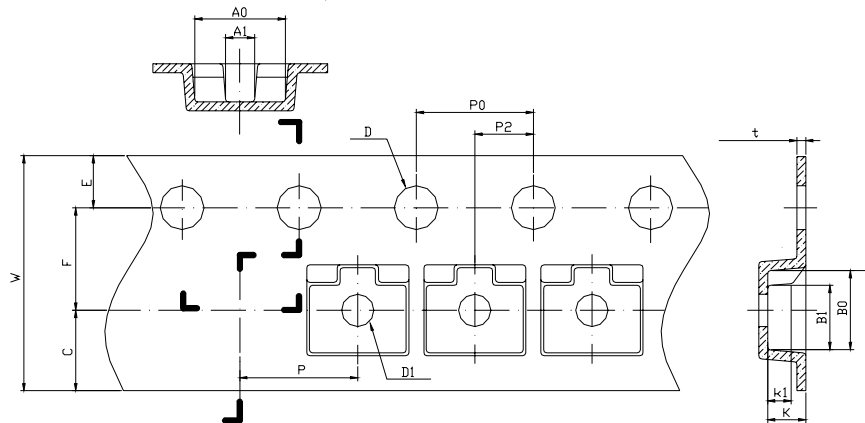
Symbol	Dimensions in Millimeters	Dimensions in Inches
	Nominal	Nominal
W1	1.900	0.0748
W2	0.950	0.0374
W3	0.800	0.0315
T	2.000	0.0787
T1	1.000	0.0394



SOT-23 PACKAGING:



SOT-23 EMBOSSED CARRIER TAPE:



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
A0	3.050	3.150	3.250	0.1201	0.1240	0.1280
A1	0.900	1.000	1.100	0.0354	0.0394	0.0433
B0	2.669	2.769	2.869	0.1051	0.1090	0.1130
B1	2.100	2.200	2.300	0.0827	0.0866	0.0906
C	2.750TYP			0.1083TYP		
D	1.500	1.500	1.600	0.0591	0.0591	0.0630
D1	0.900	1.000	1.100	0.0354	0.0394	0.0433
E	1.650	1.750	1.850	0.0650	0.0689	0.0728
F	3.450	3.500	3.550	0.1358	0.1378	0.1398
K	1.119	1.219	1.319	0.0441	0.0480	0.0519
K1	0.850TYP			0.03346TYP		
P	3.900	4.000	4.100	0.1535	0.1575	0.1614
P0	3.900	4.000	4.100	0.1535	0.1575	0.1614
P010	39.800	40.000	40.200	1.5669	1.5748	1.5827
P2	1.950	2.000	2.050	0.0768	0.0787	0.0807
t	0.216	0.229	0.242	0.0085	0.0090	0.0095
W	7.900	8.000	8.300	0.3110	0.3150	0.3268