

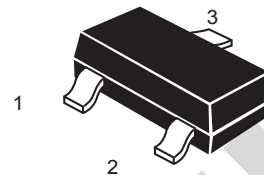
SURFACE MOUNT SMALL SIGNAL TRANSISTORS

- * Epitaxial Die Construction
- * Ideally Suited Automatic Insertion
- * 310mW Power Dissipation
- * Complementary PNP types Available(BC856-BC858)
- * For Switching and AF Amplifier Applications

ABSOLUTE MAXIMUM RATINGS at Ta=25°C

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	BC846	80	V
	BC847	50	
	BC848	30	
Collector-Emitter Voltage	BC846	65	V
	BC847	45	
	BC848	30	
Emitter-Base Voltage	BC846	6.0	V
	BC847	6.0	
	BC848	5.0	
Collector Current	I _c	100	mA
Collector Dissipation Ta=25°C*	P _D	310	mW
Junction Temperature Range	T _j	-55-150	°C
Storage Temperature Range	T _{stg}	-55-150	°C

Package:SOT-23



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	BC846	80			V	I _c =10uA I _e =0
	BC847	50				
	BC848	-30				
Collector-Emitter Breakdown Voltage	BC846	65			V	I _c = 10mA I _b =0
	BC847	45				
	BC848	30				
Collector-Emitter Saturation Voltage	V _{ce(sat)}		90	250	mV	I _c =10mA I _b =0.5mA
			200	600		I _c =100mA I _b =5.0mA
Base-Emitter Saturation Voltage	V _{be(sat)}		700		mV	I _c =10mA I _b =0.5mA
			900			I _c =100mA I _b =5.0mA
Base-Emitter Voltage	V _{be}	580	660	770	mV	V _{ce} =5.0V I _c =2.0mA
				720		V _{ce} =5.0V I _c =10mA

SURFACE MOUNT SMALL SIGNAL TRANSISTORS

ELECTRICAL CHARACTERISTICS at Ta=25°C (CONTINUED)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
DC Current Gain Current Gain GroupA	H _{FE}		90			V _{ce} =5.0V I _c =10uA V _{ce} =5.0V I _c =2.0mA
B			150			
C			270			
Current Gain GroupA		110	180	220		
B		200	290	450		
C		420	520	800		
Collector-Emitter Cutoff Current BC846	I _{CES}		0.2	15	nA	V _{ce} =80V
BC847	I _{CES}		0.2	15	nA	V _{ce} =50V
BC848	I _{CES}		0.2	15	nA	V _{ce} =30V
BC846	I _{CES}		4.0	uA		V _{ce} =80V ,T _j =125°C
BC847	I _{CES}		4.0	uA		V _{ce} =50V ,T _j =125°C
BC848	I _{CES}		4.0	uA		V _{ce} =30V ,T _j =125°C
	I _{CBO}		15	nA		V _{cb} =30V
	I _{CBO}		5.0	uA		V _{cb} =30V ,T _j =125°C
Collector-Base Capacitance	C _{cbo}		3.5	6.0	PF	V _{cb} =10V f=1MHz
Emitter-Base Capacitance	C _{ebo}		9.0		PF	V _{eb} =0.5V f=1MHz
Gain Bandwidth Product	f _T		300		MHz	V _{ce} =5V I _c =10mA f=100MHz
Noise Figure	NF		2.0	10	dB	V _{ce} =5V I _c =200uA R _G =2KΩ f=1MHz Δf=200Hz

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

Pulse Test : Pulse Width ≤300uS, Duty cycle ≤2%

DEVICE MARKING:

BC846ALT1=1A

BC846BLT1=1B

BC847ALT1=1E

BC847BLT1=1F

BC847CLT1=1G

BC848ALT1=1J

BC848BLT1=1K

BC848CLT1=1L

Fig.1 Grounded emitter propagation characteristics

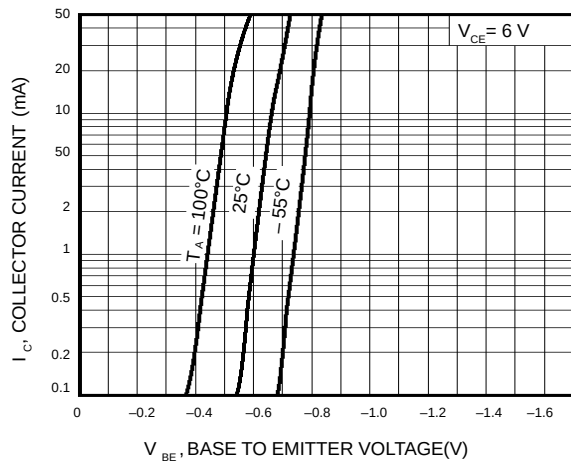


Fig.2 Grounded emitter output characteristics(I)

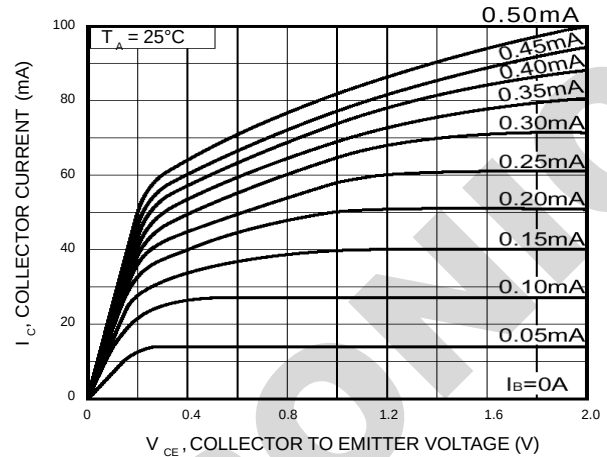


Fig.3 Grounded emitter output characteristics(II)

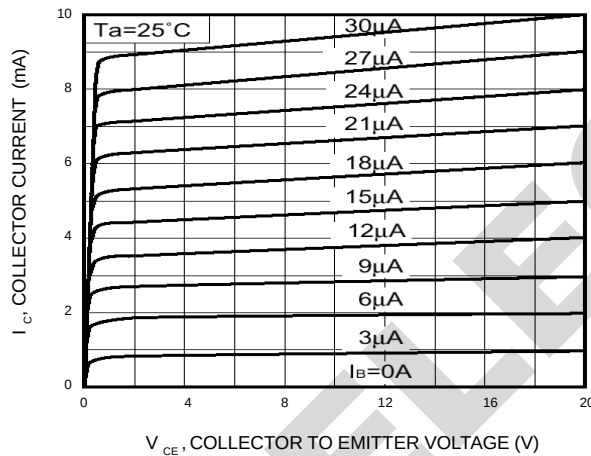


Fig.4 DC current gain vs. collector current (I)

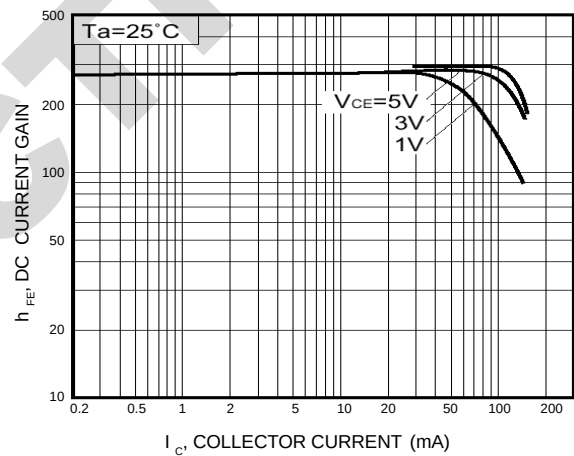


Fig.5 DC current gain vs. collector current (II)

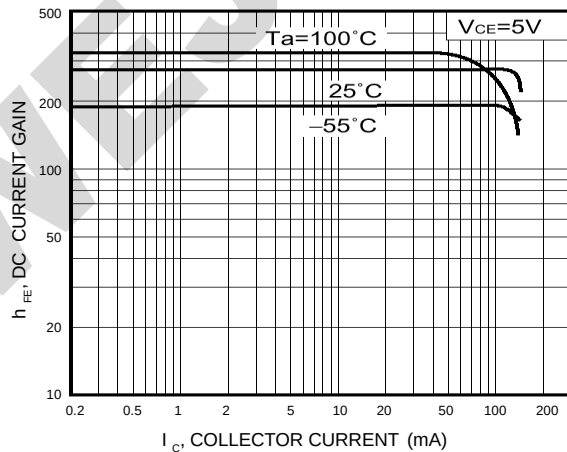


Fig.6 Collector-emitter saturation voltage vs. collector current

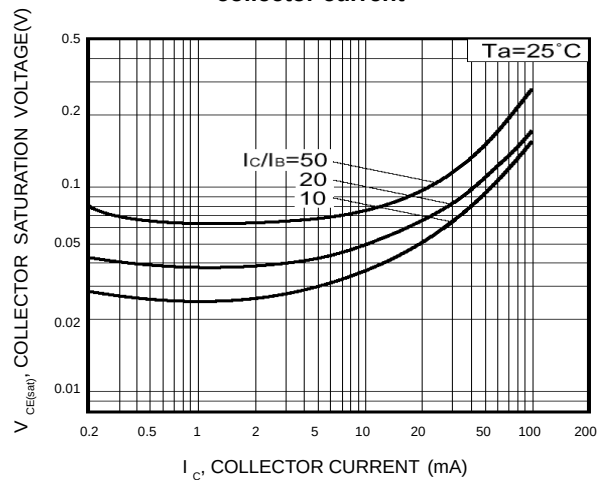


Fig.7 Collector-emitter saturation voltage vs. collector current (I)

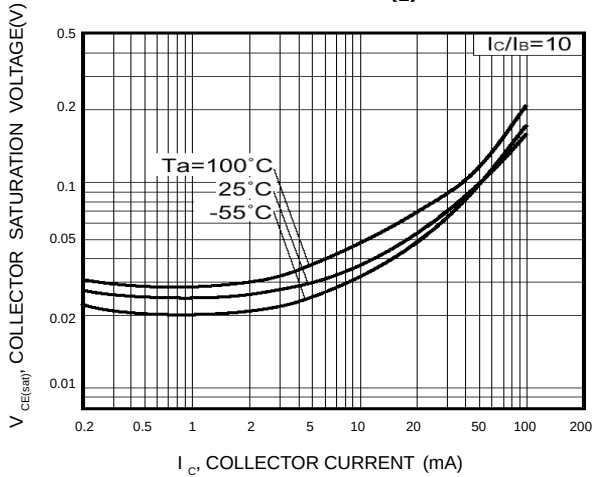


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

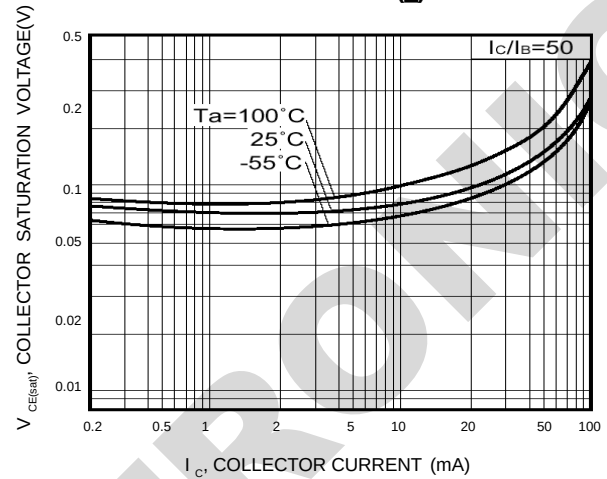


Fig.9 Gain bandwidth product vs. emitter current

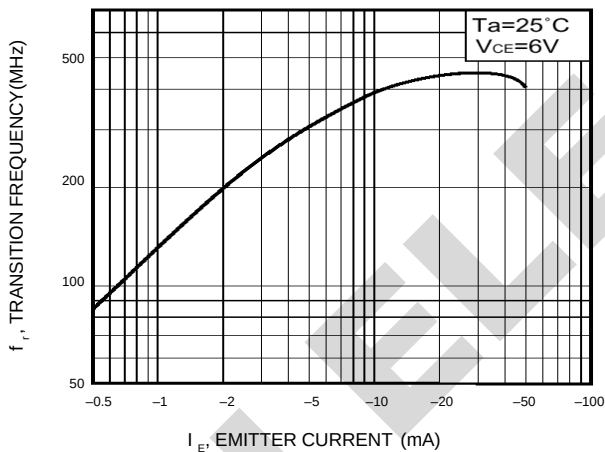
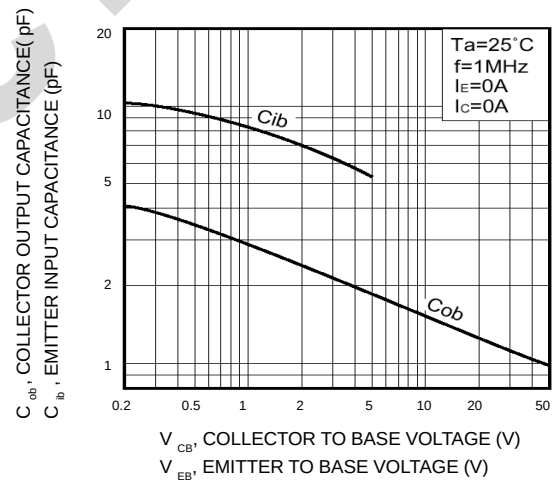
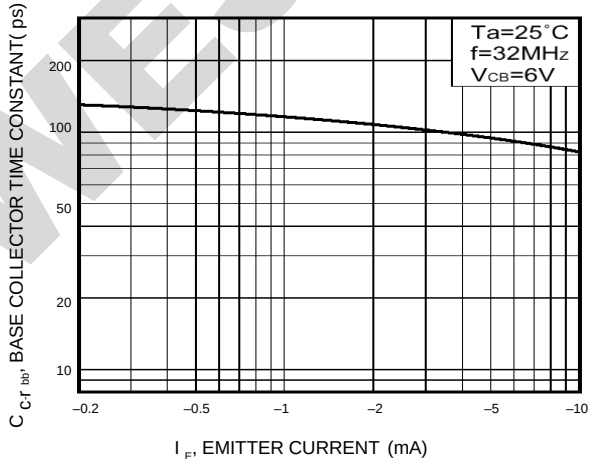
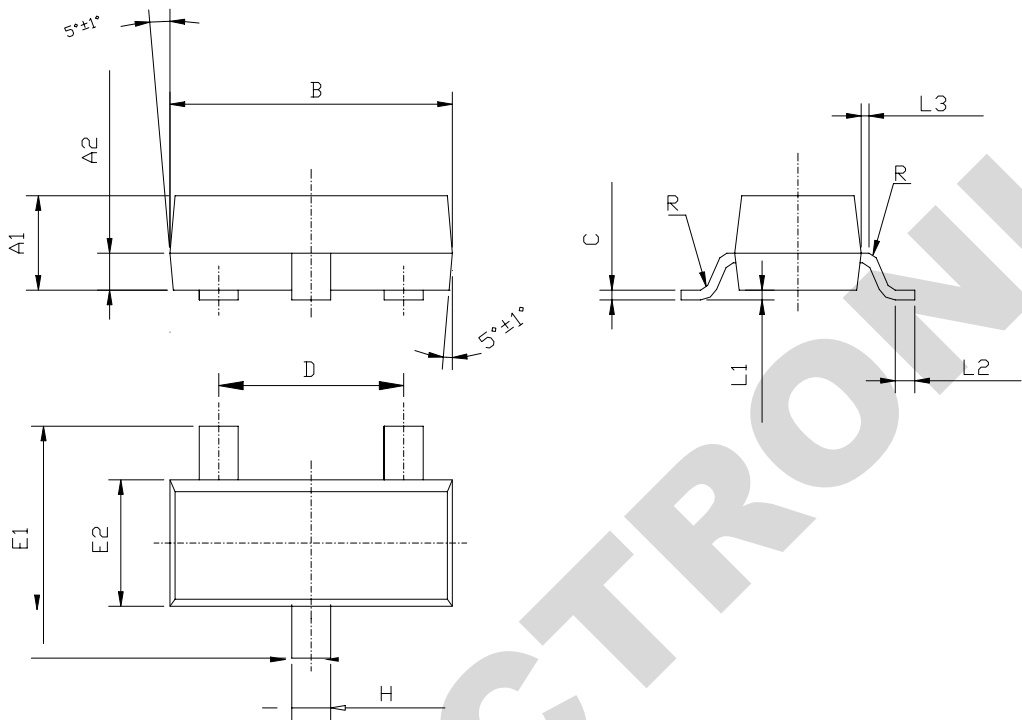
Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

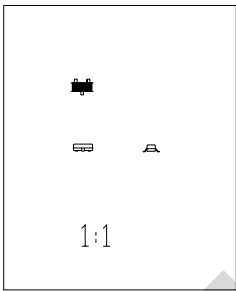
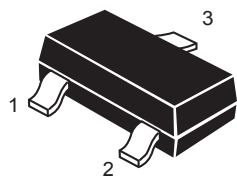
Fig.11 Base-collector time constant vs. emitter current



OUTSIDE DEMENSION AND INTERNAL CONFIGURATION (SOT-23)

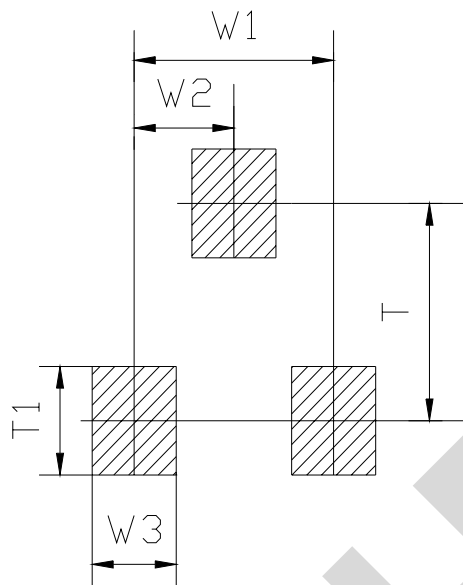


Symbol	Dimensions in Millimeters			内部结构 STYLS	管脚 PIN		
	Min	Nominal	Max		1 脚	2 脚	3 脚
A1	0.900	0.970	1.000	6	基极 BASE	发射极 EMITTER	集电极 COLLCTOR
A2	0.350	0.380	0.410				
B	2.800	2.900	3.000	8	阳极 ANODE	不连接 NO- CONNECTION	阴极 CATHODE
C	0.085	0.100	0.150				
D	1.800	1.900	2.000	9	阳极 ANODE	阳极 ANODE	阴极 CATHODE
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

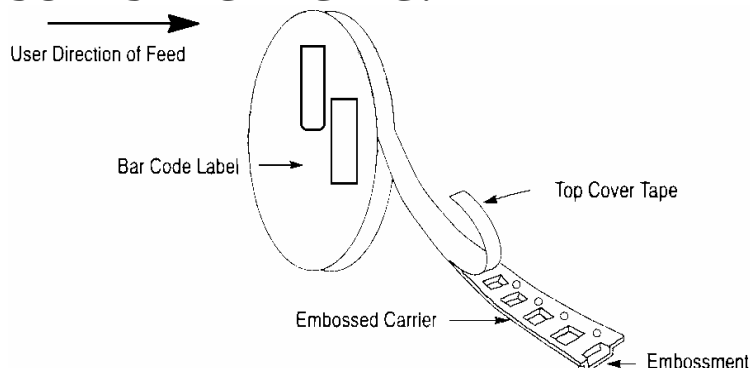


FOOTPRINTS FOR SOLDERING

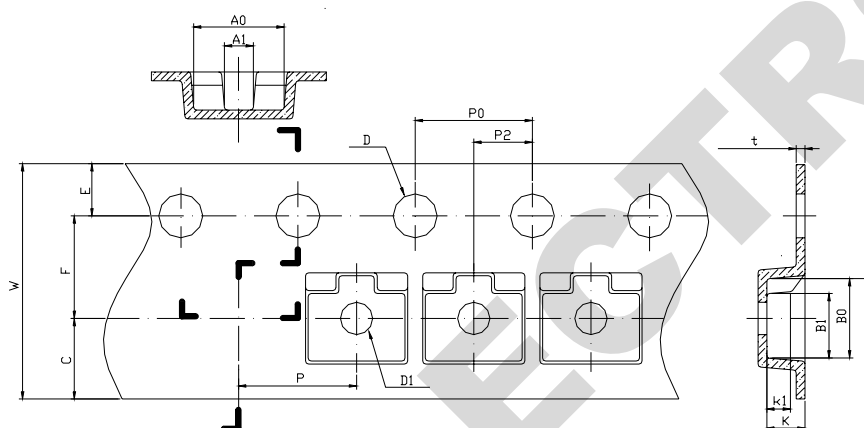
Symbol	Dimensions in Millimeters	Dimensions in Inches
	Nominal	Nominal
W1	1.900	0.0748
W2	0.950	0.0374
W3	0.800	0.0315
T	2.000	0.0787
T1	1.000	0.0394

SOT-23 TAPE AND REEL DATA

SOT-23 PACKAGING:

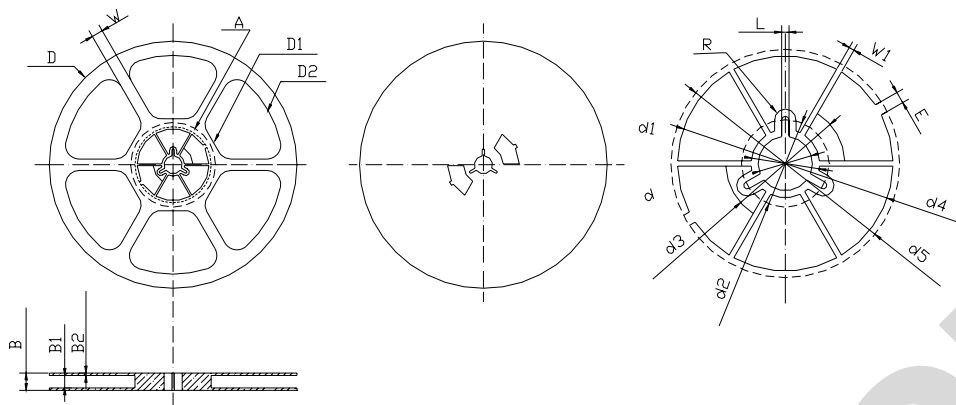


SOT-23 EMBOSSED CARRIER TAPE:



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

SOT-23 REEL DATA:



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
B	-	-	12.500	-	-	0.4921
B1	8.900	9.000	9.100	0.3504	0.3543	0.3583
B2	1.700	1.750	1.800	0.0669	0.0689	0.0709
D	Φ177.000	Φ178.000	Φ179.000	Φ6.9685	Φ7.0079	Φ7.0472
D1	Φ67.600TYP			Φ2.6614TYP		
D2	Φ157.600TYP			Φ6.2047 TYP		
d	Φ12.800	Φ13.000	Φ13.200	Φ0.5039	Φ0.5118	Φ0.5197
d1	Φ16.40 TYP			Φ0.6457 TYP		
d2	Φ21.000 TYP			Φ0.8268 TYP		
d3	Φ25.200 TYP			Φ0.99221TYP		
d4	Φ50.600	Φ51.600	Φ52.600	Φ1.9921	Φ2.0315	Φ2.0709
d5	Φ53.800	Φ54.800	Φ55.800	Φ2.1181	Φ2.1575	Φ2.1969
E	2.800 TYP			0.1102TYP		
L	1.750 TYP			0.0689 TYP		
R	2.575 TYP			0.1014 TYP		
W	15.000 TYP			0.5906 TYP		
W1	1.300 TYP			0.0512 TYP		