

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

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	Ic	100	mA
Collector Dissipation Ta=25 *	P _D	310	mW
Junction Temperature Range	T _j	-55-150	
Storage Temperature Range	T _{stg}	-55-150	

Package:SOT-23



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

ELECTRICAL CHARACTERISTICS at Ta=25

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BC846	80			V	Ic=10uA Ie=0
	BC847	50				
	BC848	30				
Collector-Emitter Breakdown Voltage	BC846	65			V	Ic= 10mA Ib=0
	BC847	45				
	BC848	30				
Collector-Emitter Saturation Voltage	Vce(sat)		90	250	mV	Ic=10mA Ib=0.5mA Ic=100mA Ib=5.0mA
			200	600		
Base-Emitter Saturation Voltage	Vbe(sat)		700		mV	Ic=10mA Ib=0.5mA Ic=100mA Ib=5.0mA
			900			
Base-Emitter Voltage	Vbe	580	660	700	mV	Vce=5.0V Ic=2.0mA Vce=5.0V Ic=10mA
				770		



SEMICONDUCTOR
TECHNICAL DATA

BC846A-BC848C

NPN EPITAXIAL SILICON TRANSISTOR

SURFACE MOUNT SMALL SIGNAL TRANSISTORS

ELECTRICAL CHARACTERISTICS at Ta=25 (CONTINUED)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
DC Current Gain						
A	H _{FE}	110		220		V _{ce} =5.0V I _c =2.0mA
B		200		450		
C		420		800		
Collector-Emitter Cutoff Current	I _{CES}			0.1	μ A	V _{ce} =60V V _{ce} =45V V _{ce} =30V
BC846						
BC847						
BC848	I _{CBO}			0.1	μ A	V _{cb} =70V V _{cb} =50V V _{cb} =30V
BC846						
BC847						
BC848						
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 =2K f=1MHz f=200Hz

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

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

DEVICE MARKING:

- BC846A=1A
- BC846B=1B
- BC847A=1E
- BC847B=1F
- BC847C=1G
- BC848A=1J
- BC848B=1K
- BC848C=1L



Fig.1 Grounded emitter propagation characteristics

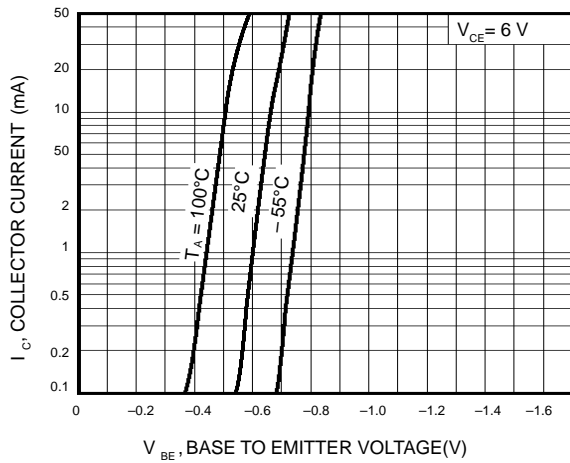


Fig.2 Grounded emitter output characteristics(I)

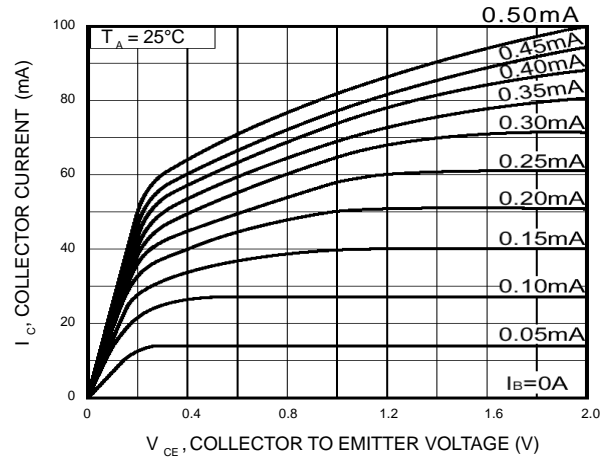


Fig.3 Grounded emitter output characteristics(II)

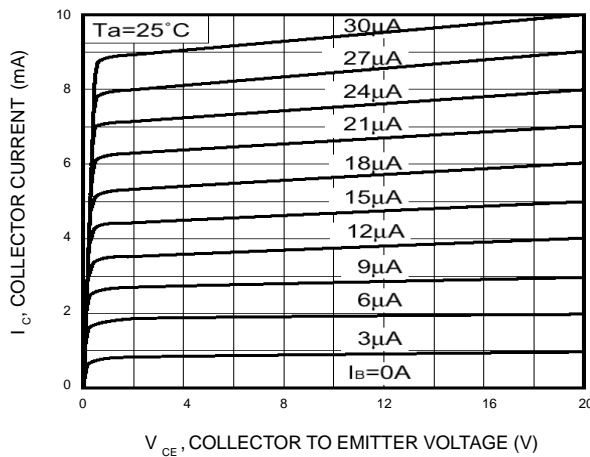


Fig.4 DC current gain vs. collector current (I)

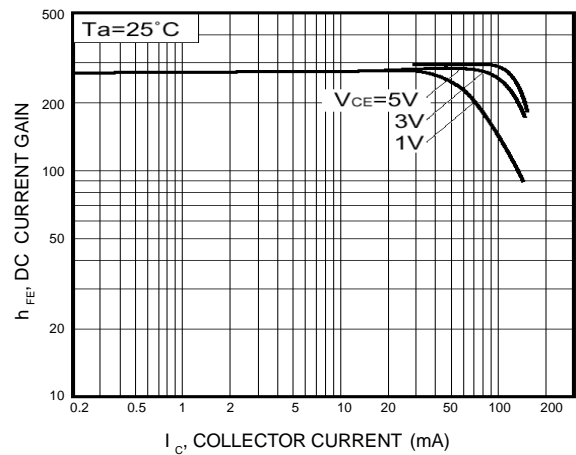


Fig.5 DC current gain vs. collector current (II)

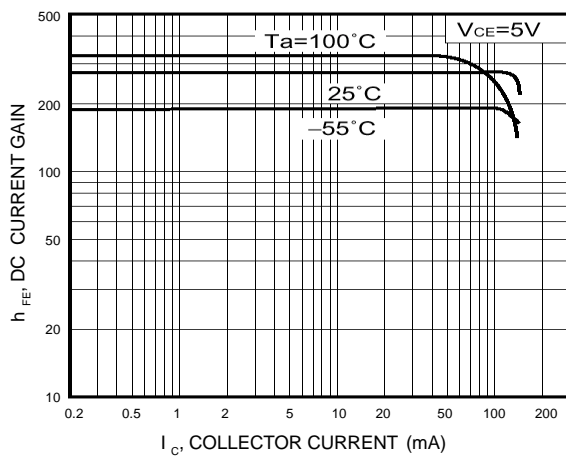


Fig.6 Collector-emitter saturation voltage vs. collector current

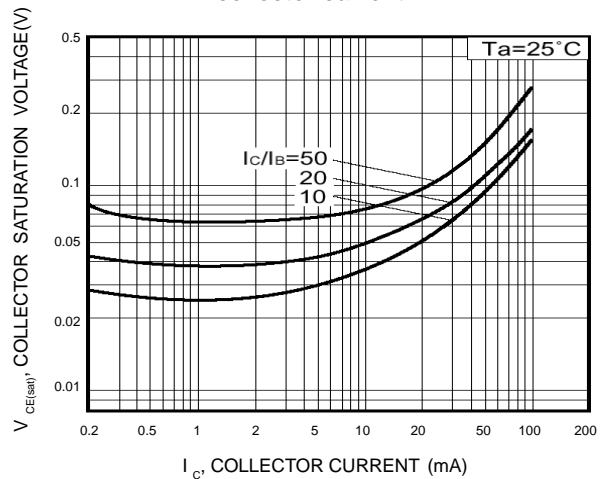


Fig.7 Collector-emitter saturation voltage vs. collector current (I)

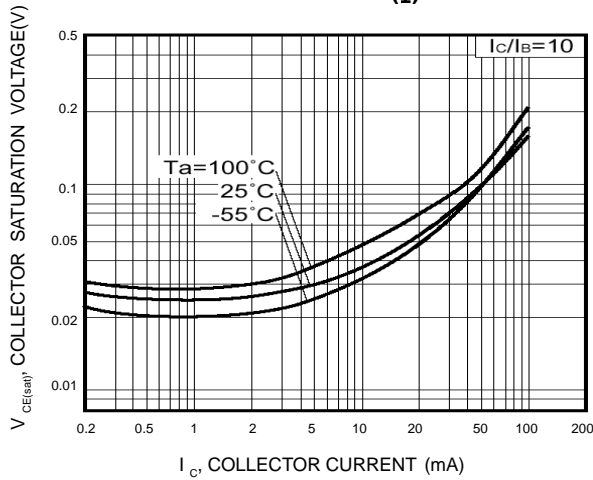


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

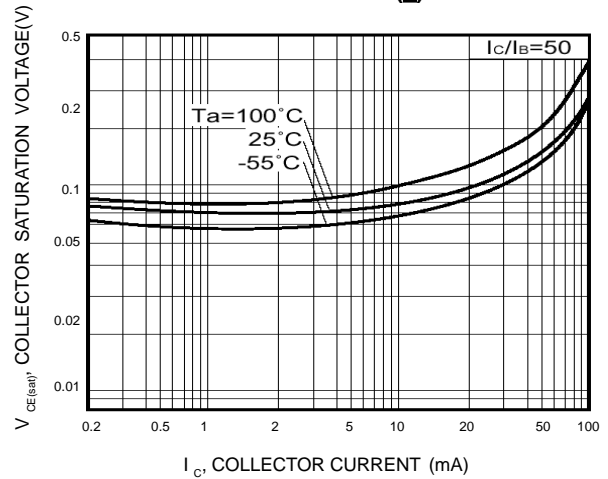
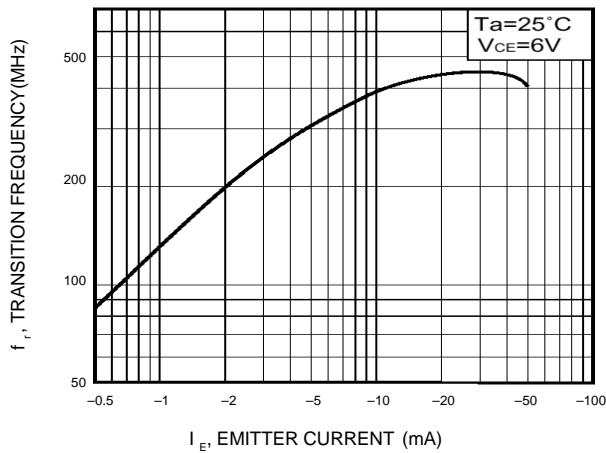


Fig.9 Gain bandwidth product vs. emitter current



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

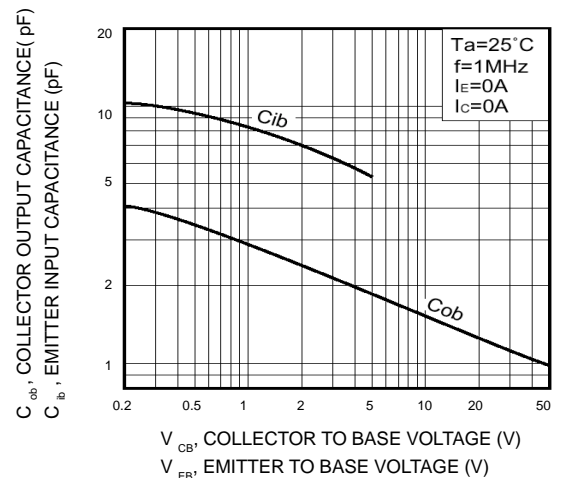
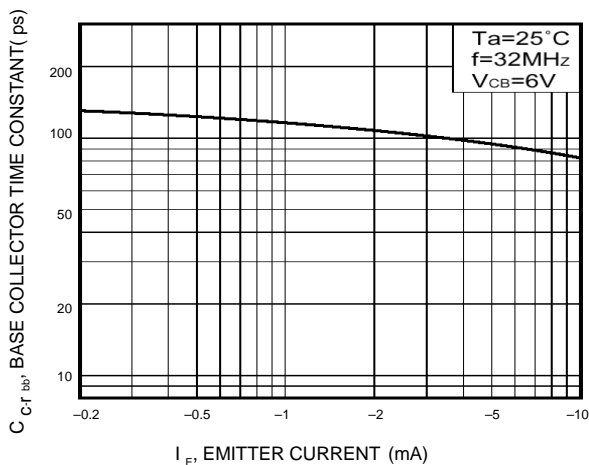
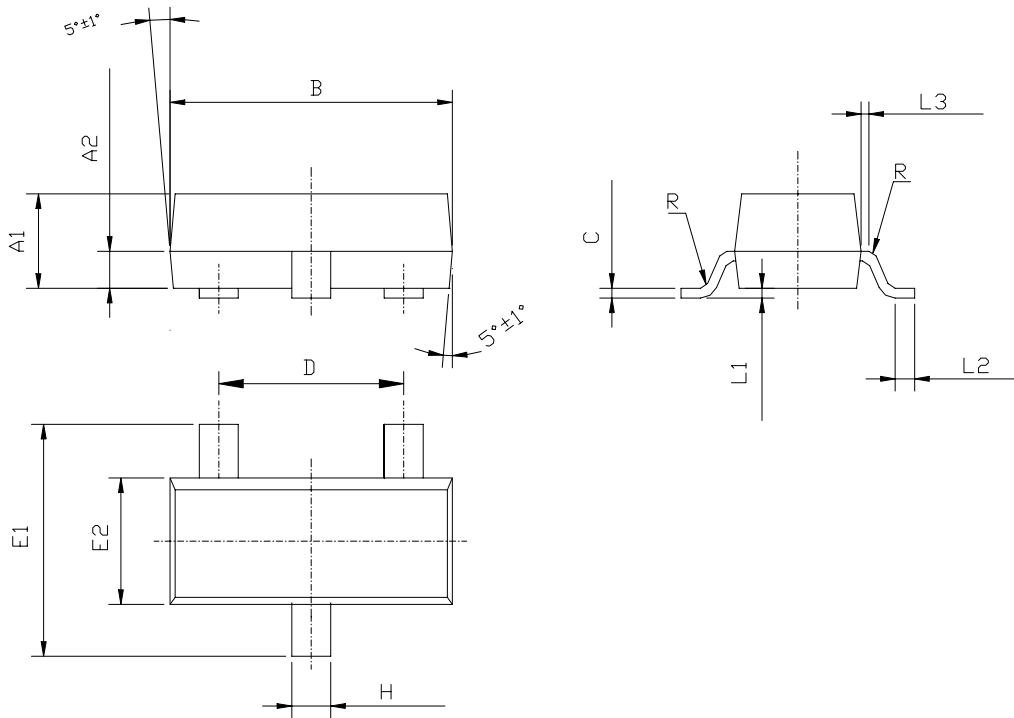
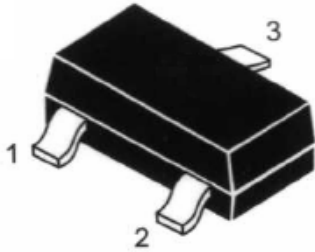


Fig.11 Base-collector time constant vs. emitter current

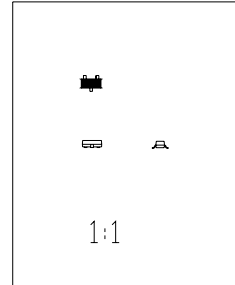




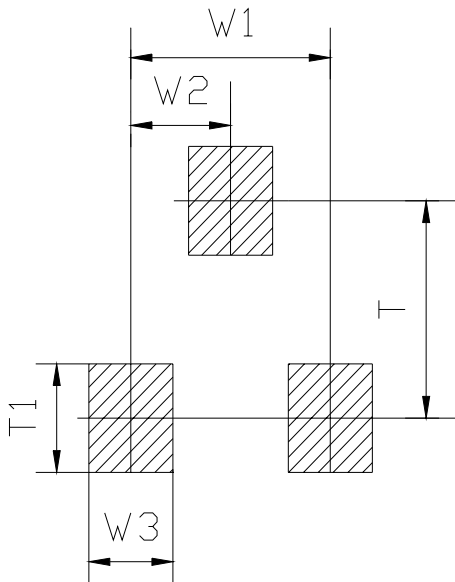
Symbol	Dimensions in Millimeters			内部结构 STYLS	管脚 PIN		
	Min	Nominal	Max		1 脚	2 脚	3 脚
A1	0.900	0.970	1.000	6	基极 BASE	发射极 EMITTER	集电极 COLLECTOR
A2	0.350	0.380	0.410		8	阳极 ANODE	不连接 NO- CONNECTION
B	2.800	2.900	3.000	9		阳极 ANODE	阳极 ANODE
C	0.085	0.100	0.150		11	阳极 ANODE	阴极 CATHODE
D	1.800	1.900	2.000	12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



OUTSIDE



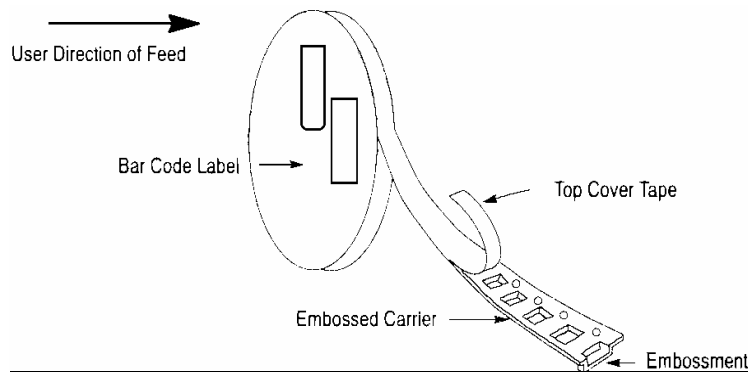
Scale 1:1 on letter size paper



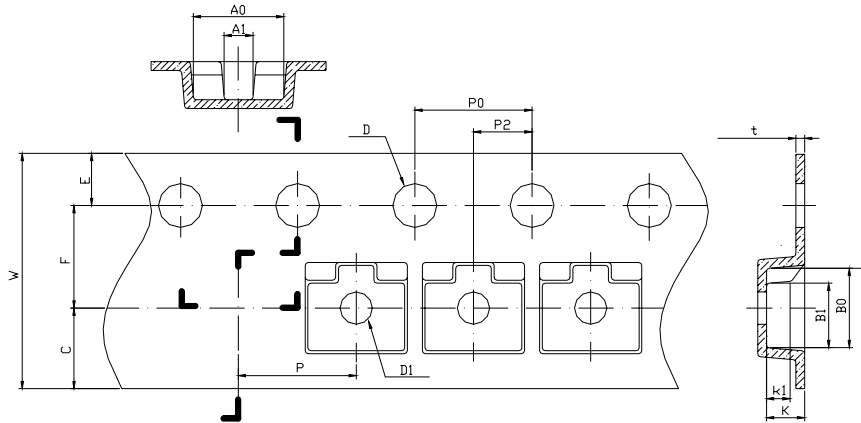
FOOTPRINTS FOR SOLDERING

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:

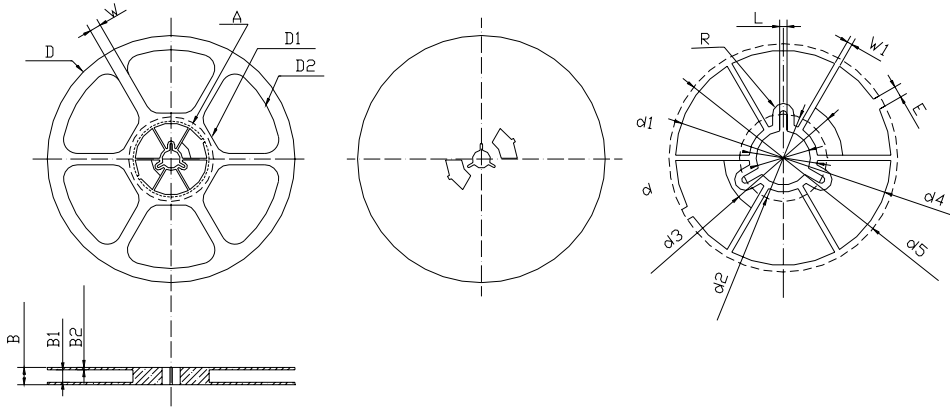


SOT-23 EMBOSSED CARRIER TAPE:



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

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	ϕ 177.000	ϕ 178.000	ϕ 179.000	Φ 6.9685	Φ 7.0079	Φ 7.0472
D1	Φ 67.600TYP			Φ 2.6614TYP		
D2	Φ 157.600TYP			Φ 6.2047 TYP		
d	Φ 12.800	Φ 13.000	Φ 13.200	Φ 0.5039	Φ 0.5118	Φ 0.5197
d1	Φ 16.40 TYP			Φ 0.6457 TYP		
d2	Φ 21.000 TYP			Φ 0.8268 TYP		
d3	Φ 25.200 TYP			Φ 0.99221TYP		
d4	Φ 50.600	Φ 51.600	Φ 52.600	Φ 1.9921	Φ 2.0315	Φ 2.0709
d5	Φ 53.800	Φ 54.800	Φ 55.800	Φ 2.1181	Φ 2.1575	Φ 2.1969
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		