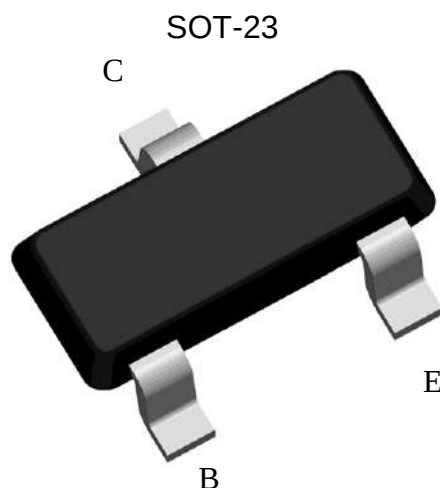


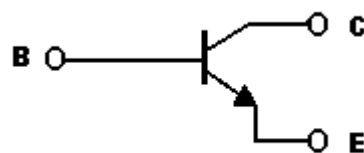
General Purpose NPN Epitaxial Planar Transistor

Features:

- High breakdown voltage, $BV_{CEO} \geq 60V$
- Large continuous collector current capability
- Low collector saturation voltage
- Pb-free lead plating and halogen-free package



BV_{CEO}	60V
I_C	3A



B : Base
 C : Collector
 E : Emitter

Ordering Information

Device	Package	Shipping
KWD1616A	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CB0}	120	V
Collector-Emitter Voltage	V _{CEO}	60	
Emitter-Base Voltage	V _{EB0}	7	
Collector Current (DC)	I _C	3	A
Collector Current (pulse)	I _{CP}	5	
Base Current	I _B	0.5	
Power Dissipation	P _D	310 (Note 1)	mW
		500 (Note 2)	
		660 (Note 3)	
Thermal Resistance, Junction to Ambient	R _{θJA}	403 (Note 1)	°C/W
		250 (Note 2)	
		190 (Note 3)	
Operating Junction and Storage Temperature Range	T _j ; T _{stg}	-55~+150	°C

Note : 1. Device mounted on FR-4 PCB with minimum pad.

2. Device mounted on FR-4 PCB with area of 4.5"x5", mounting pad 0.02 in² of 2 oz. copper.

3. Device mounted on an FR-4 PCB, single sided copper, tin plated, mounting pad for collector 1cm².

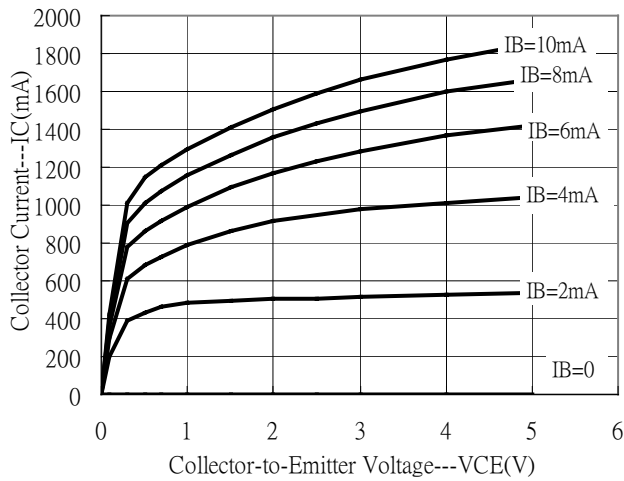
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	120	-	-	V	I _C =100μA
BV _{CEO}	60	-	-	V	I _C =1mA
BV _{EB0}	7	-	-	V	I _E =50μA
I _{CB0}	-	-	100	nA	V _{CB} =120V
I _{EB0}	-	-	100	nA	V _{EB} =7V
*V _{CE(sat)}	-	98	150	mV	I _C =1A, I _B =50mA
*V _{CE(sat)}	-	131	200	mV	I _C =1A, I _B =20mA
*V _{CE(sat)}	-	90	250	mV	I _C =1A, I _B =100mA
*V _{CE(sat)}	-	150	300	mV	I _C =2A, I _B =200mA
*V _{BE(sat)}	-	-	1	V	I _C =1A, I _B =50mA
*V _{BE(sat)}	-	-	1.2	V	I _C =1A, I _B =100mA
*V _{BE(on)}	-	-	1	V	V _{CE} =2V, I _C =1A
*h _{FE} 1	150	-	-	-	V _{CE} =2V, I _C =100mA
*h _{FE} 2	180	-	390	-	V _{CE} =2V, I _C =500mA
*h _{FE} 3	100	-	-	-	V _{CE} =2V, I _C =1A
*h _{FE} 4	50	-	-	-	V _{CE} =2V, I _C =2A
f _T	100	-	-	MHz	V _{CE} =2V, I _C =100mA, f=100MHz
Cob	-	11	18	pF	V _{CB} =10V, I _E =0A, f=1MHz
ton	-	40	-	ns	V _{CC} =30V, I _C =1A, I _{B1} =-I _{B2} =33mA, RL=30Ω
tstg	-	500	-		
tf	-	120	-		

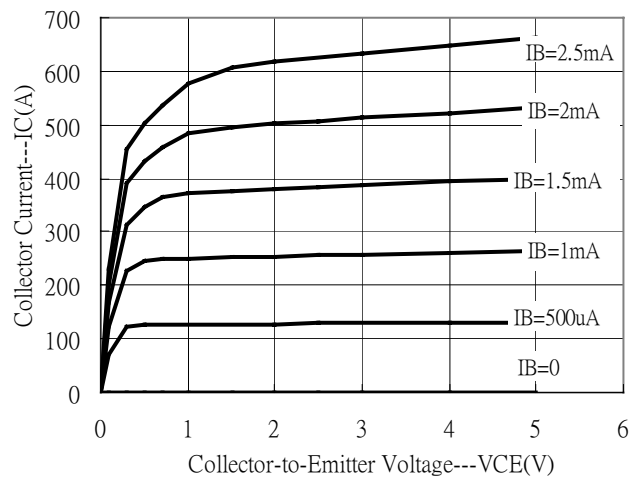
*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

Typical Characteristics

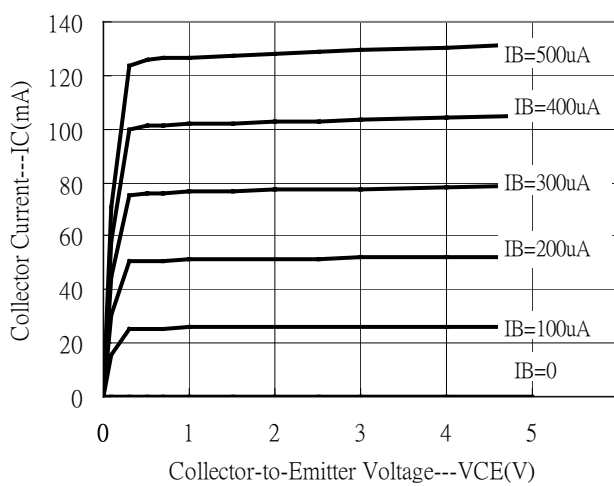
Emitter Grounded Output Characteristics



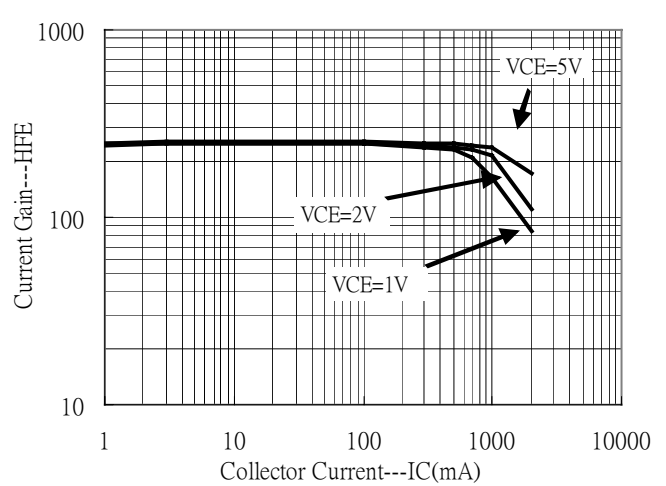
Emitter Grounded Output Characteristics



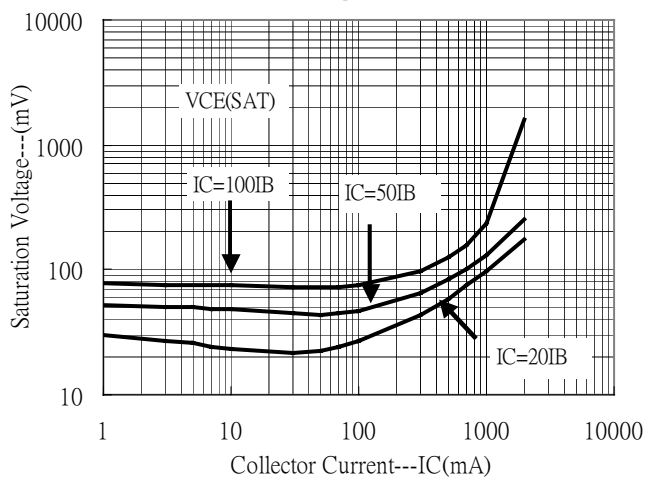
Emitter Grounded Output Characteristics



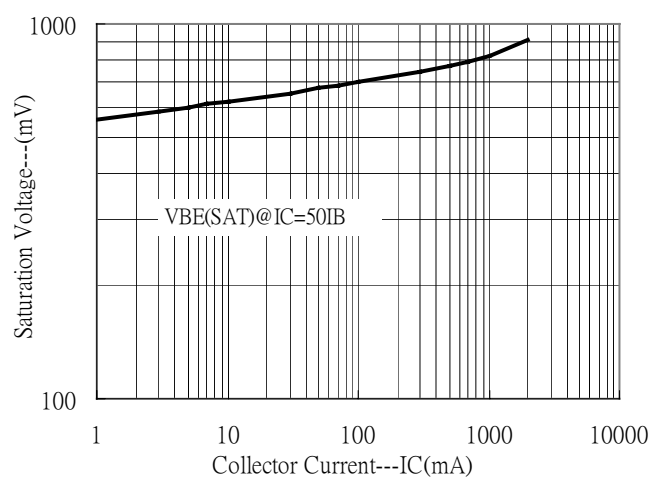
Current Gain vs. Collector Current



Saturation Voltage vs. Collector Current

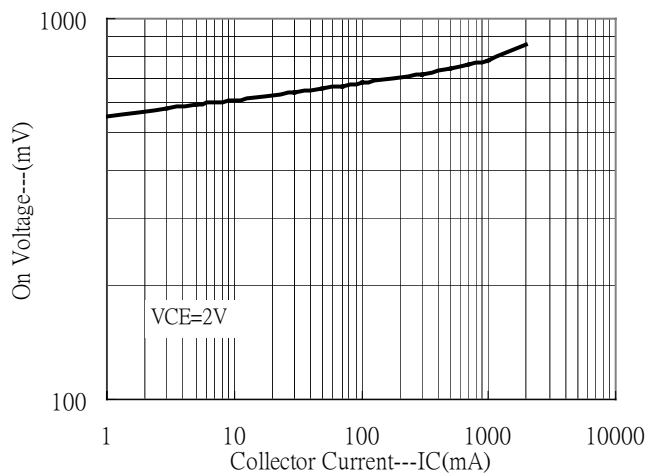


Saturation Voltage vs. Collector Current

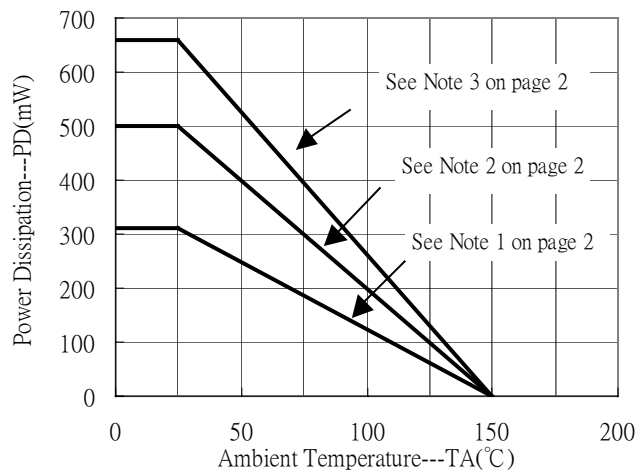


Typical Characteristic Curves(Cont.)

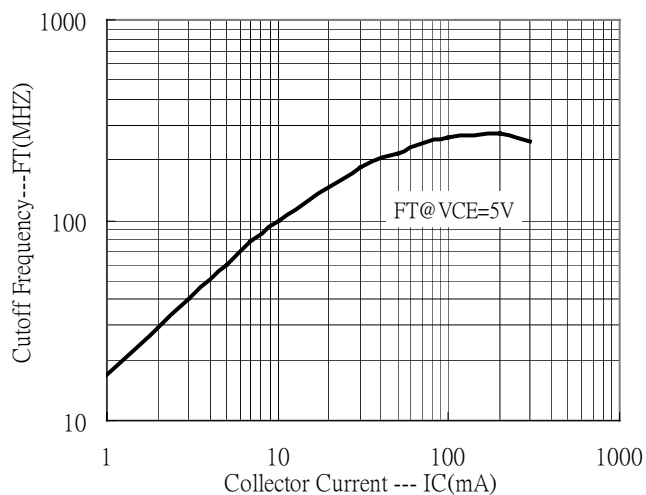
On Voltage vs Collector Current



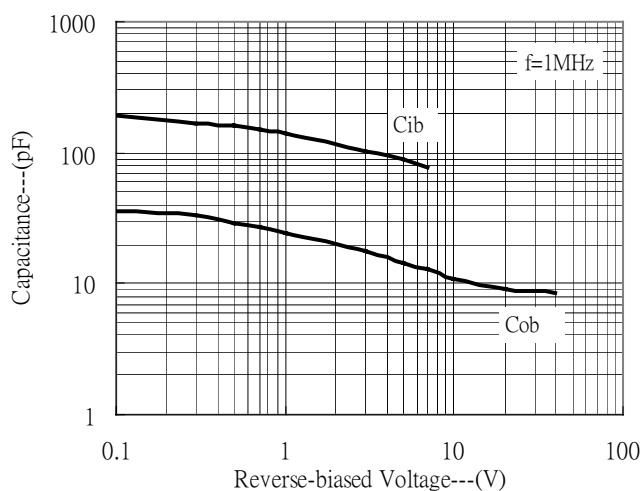
Power Derating Curves



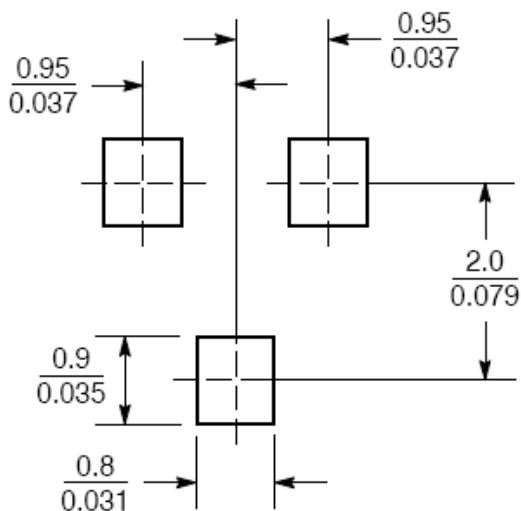
Cutoff Frequency vs Collector Current



Capacitance Characteristics

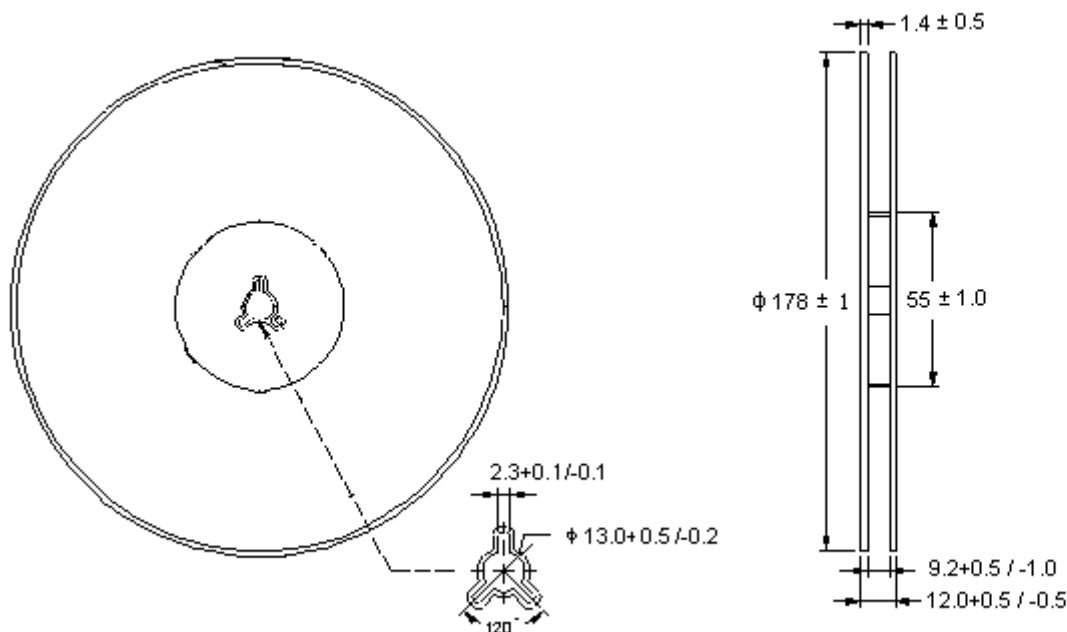


Recommended soldering footprint



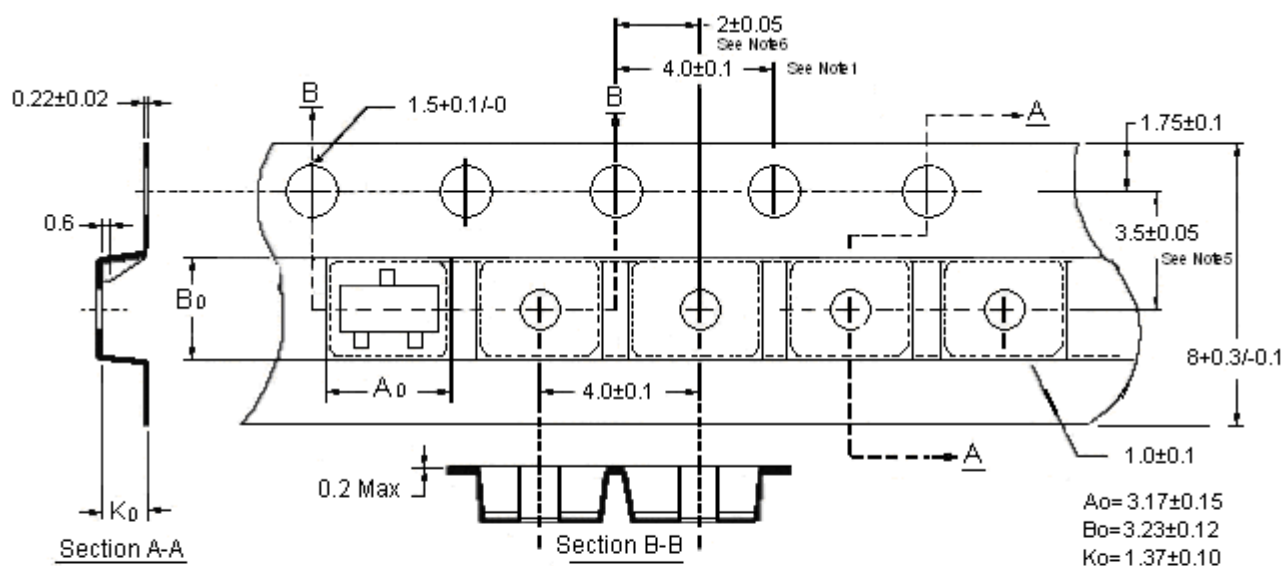
Unit : $\frac{\text{mm}}{\text{inches}}$

Reel Dimension



Unit: millimeter

Carrier Tape Dimension

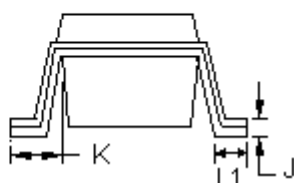
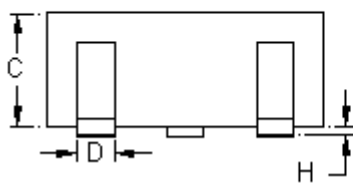
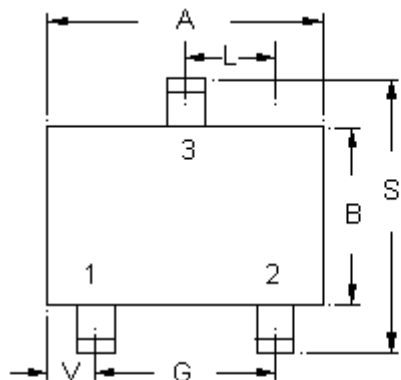


Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

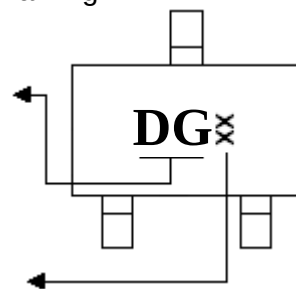
Unit : millimeter

SOT-23 Dimension



Marking:

Product Code



Date Code: Year+Month
 Year: 7→2017, 8→2018
 Month: 1→1, 2→2, . . .
 9→9, A→10, B→11, C→12

3-Lead SOT-23 Plastic
 Surface Mounted Package

Style : Pin 1.Base 2.Emitter 3.Collector

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50