

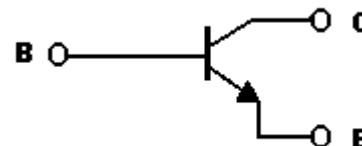
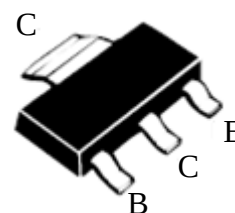
Low Vcesat NPN Epitaxial Planar Transistor

Features:

- Extremely low equivalent on resistance; $R_{CE(SAT)} \leq 60m\Omega$ at 5.2A
- 5.2A continuous collector current (10.4A peak)
- Very low saturation voltages
- Excellent gain characteristics
- Pb-free lead plating and halogen-free package

BV_{CEO}	60V
I_D	5.2A
$R_{CESAT(max)}$	55m Ω

SOT-223



B : Base
C : Collector
E : Emitter

Ordering Information

Device	Package	Shipping
KL853	SOT-223 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CBO}	60	V
Collector-Emitter Voltage	V _{CEO}	60	
Emitter-Base Voltage	V _{EBO}	6	
Collector Current (DC)	I _C	5.2	A
Collector Current (Pulse)	I _{CP}	10.2 (Note 1)	
Base Current (DC)	I _B	2	
Base Current (Pulse)	I _{BP}	4	
Power Dissipation @ T _A =25°C	P _{tot}	0.7 (Note 2)	W
		1.7 (Note 3)	
		2 (Note 4)	
Operating Junction Temperature Range	T _j	-55~+150	°C
Storage Temperature Range	T _{stg}	-55~+150	

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-ambient, max	R _{th,j-a}	179 (Note 2)	°C/W
		74 (Note 3)	
		63 (Note 4)	
Thermal Resistance, Junction-to-solder point, max	R _{th,j-sp}	15	

Note : 1. Single Pulse , P_w≤300μs, Duty≤2%.

2.Device mounted on an FR4 PCB, single-sided copper, tin plated and standard footprint.

3.Device mounted on an FR4 PCB, single-sided copper, tin plated, mounting pad for collector 6 cm².

4.Device mounted on a ceramic PCB, Al₂O₃, standard footprint.

Characteristics (Ta=25°C)

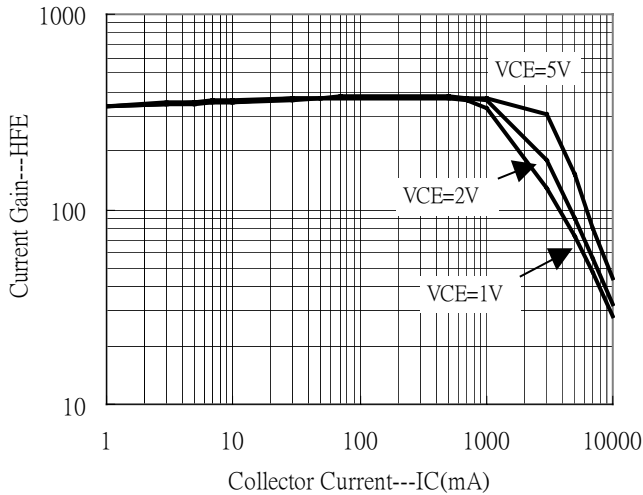
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	60	-	-	V	I _C =100μA, I _E =0
*BV _{CEO}	60	-	-	V	I _C =10mA, I _B =0
BV _{EBO}	6	-	-	V	I _C =100μA, I _C =0
I _{CBO}	-	-	50	nA	V _{CB} =60V, I _E =0
I _{EBO}	-	-	50	nA	V _{EB} =6V, I _C =0
*V _{CE(sat)} 1	-	25	35	mV	I _C =500mA, I _B =50mA
*V _{CE(sat)} 2	-	50	70	mV	I _C =1A, I _B =50mA
*V _{CE(sat)} 3	-	95	120	mV	I _C =1A, I _B =10mA
*V _{CE(sat)} 4	-	120	150	mV	I _C =2A, I _B =40mA
*V _{CE(sat)} 5	-	160	220	mV	I _C =4A, I _B =200mA
*V _{CE(sat)} 6	-	150	210	mV	I _C =4A, I _B =400mA
*V _{CE(sat)} 7	-	230	305	mV	I _C =4A, I _B =80mA
*V _{CE(sat)} 8	-	210	280	mV	I _C =5.2A, I _B =260mA

*R _{CE(sat)} 1	-	40	55	mΩ	I _C =4A, I _B =200mA
*R _{CE(sat)} 2	-	58	76	mΩ	I _C =4A, I _B =80mA
*V _{BE(sat)} 1	-	0.8	0.9	V	I _C =1A, I _B =100mA
*V _{BE(sat)} 2	-	0.94	1.05	V	I _C =4A, I _B =400mA
*V _{BE(on)}	-	0.75	0.85	V	V _{CE} =2V, I _C =2A
*h _{FE} 1	200	-	-	-	V _{CE} =1V, I _C =10mA
*h _{FE} 2	200	320	500	-	V _{CE} =1V, I _C =1A
*h _{FE} 3	35	-	-	-	V _{CE} =1V, I _C =7A
f _T	-	100	-	MHz	V _{CE} =10V, I _C =100mA, f=50MHz
C _{ob}	-	75	-	pF	V _{CB} =10V, f=1MHz
t _{on}	-	45	-	ns	V _{CC} =10V, I _C =10I _{B1} =-10I _{B2} =1A, R _L =10Ω
t _{off}	-	630	-	ns	

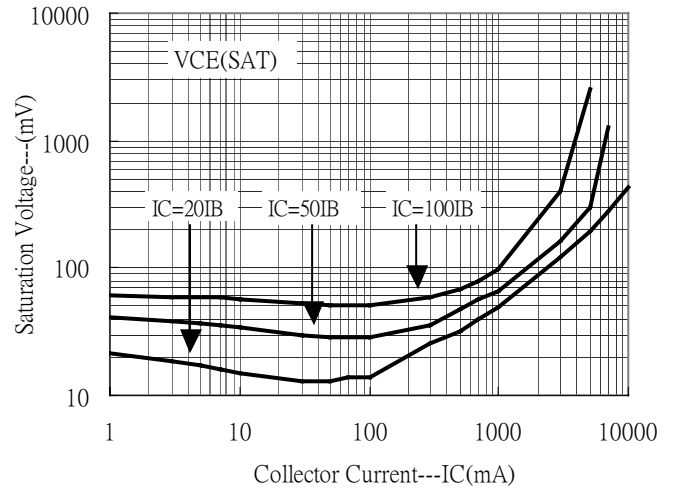
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

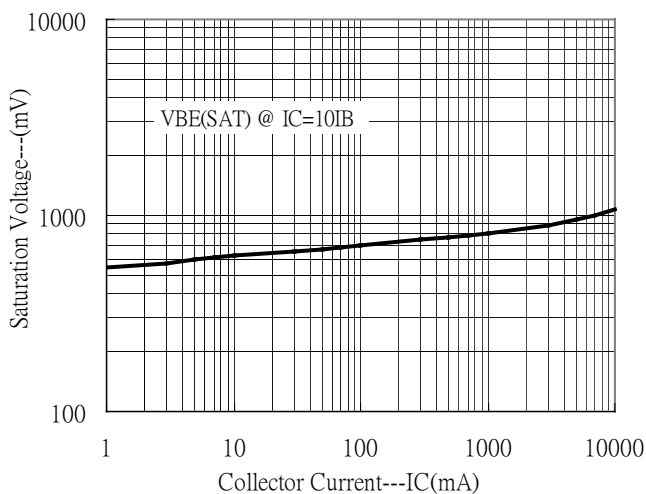
Current Gain vs Collector Current



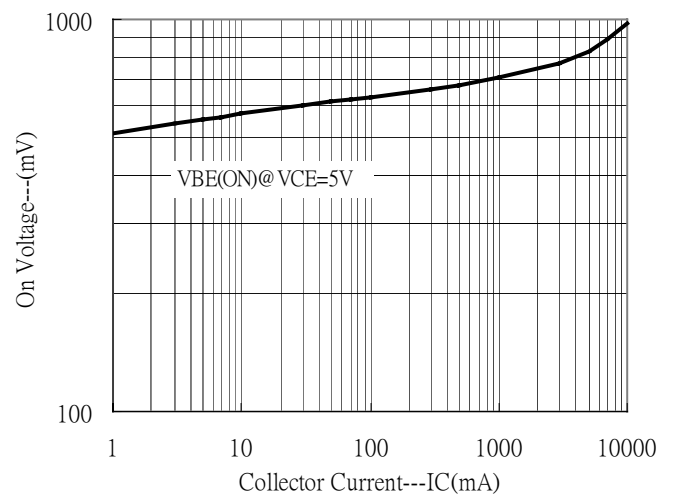
Saturation Voltage vs Collector Current



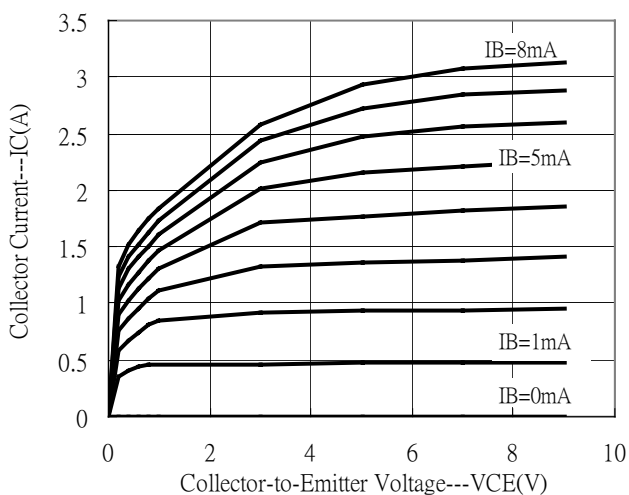
Saturation Voltage vs Collector Current



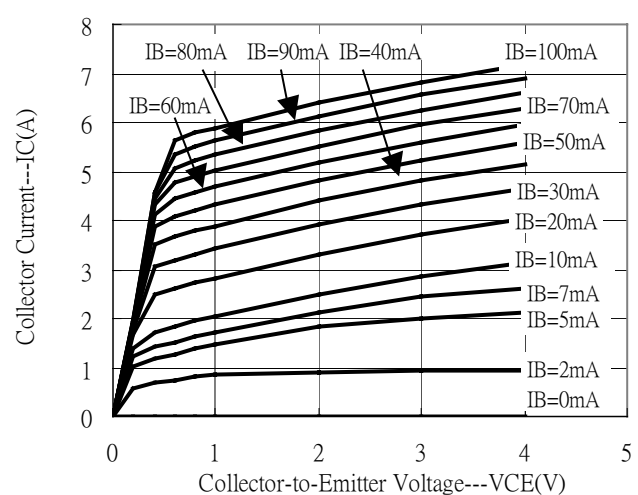
On Voltage vs Collector Current



Grounded Emitter Output Characteristics

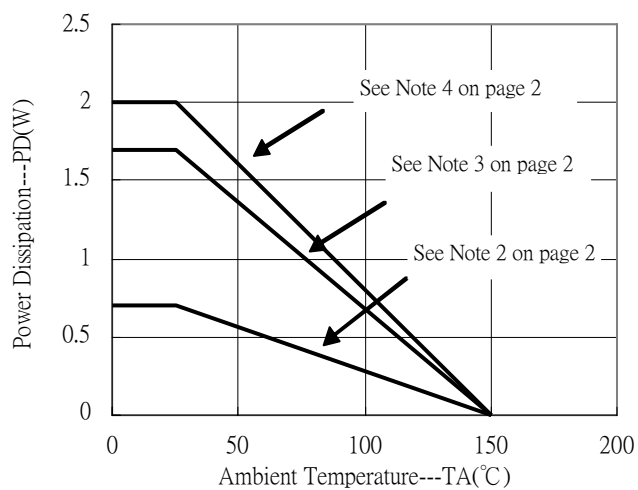


Grounded Emitter Output Characteristics

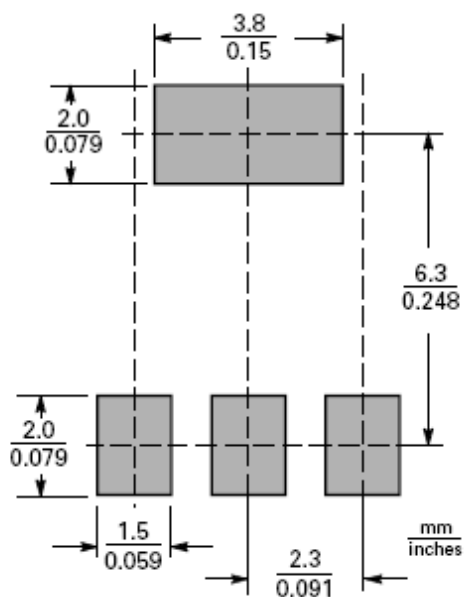


Typical Characteristics(Cont.)

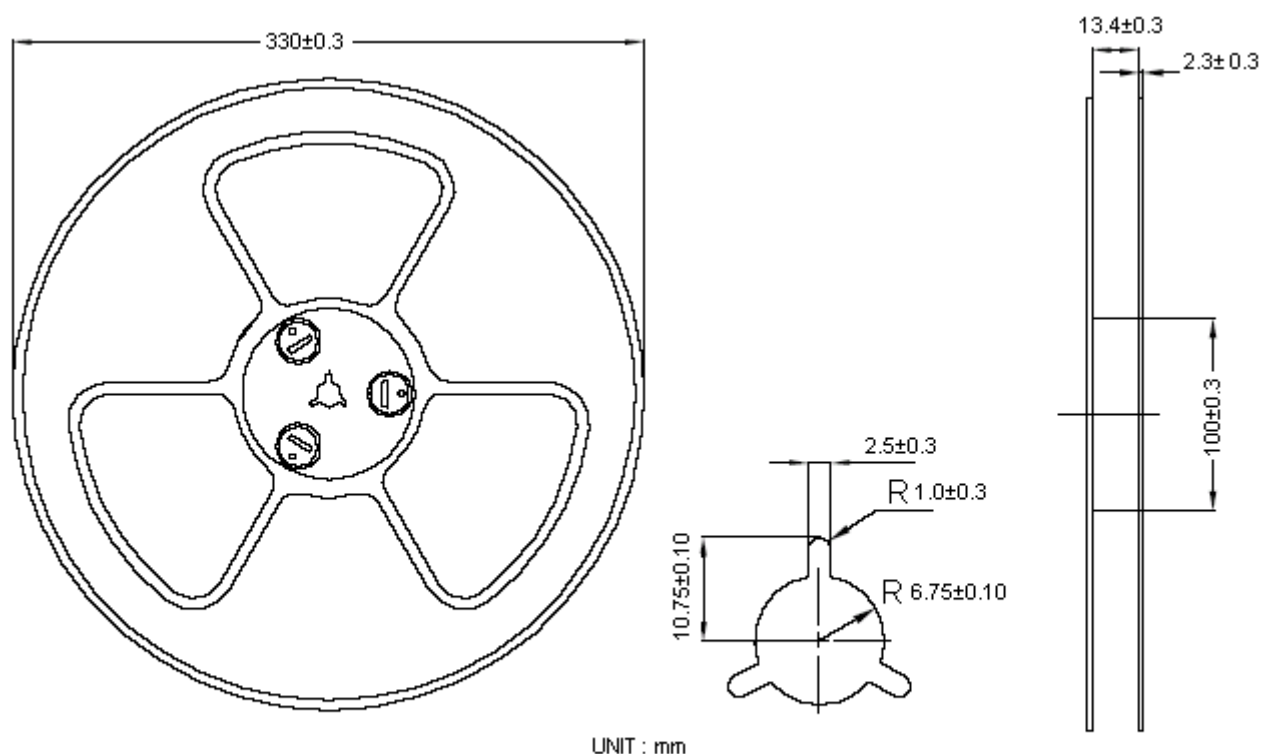
Power Derating Curves



Recommended soldering footprint



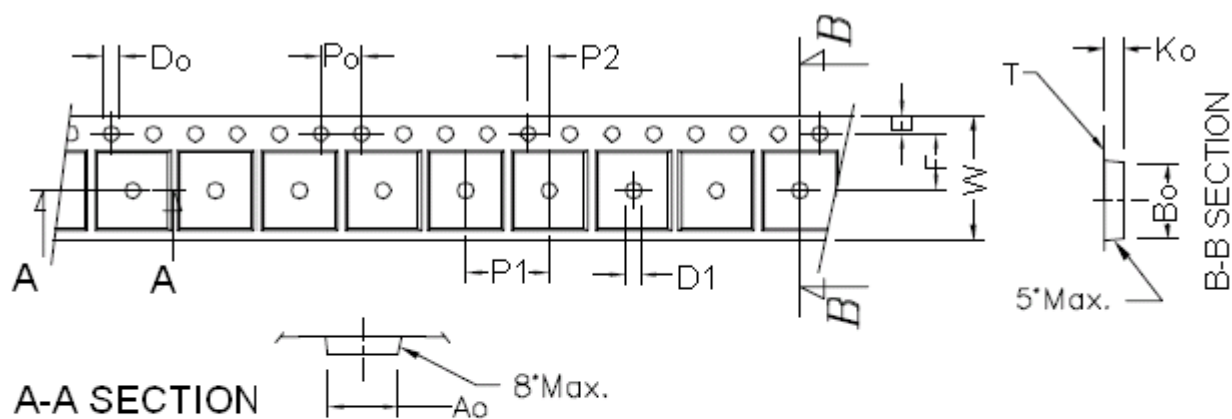
Reel Dimension



UNIT : mm

NOTE : 1. Material : Anti-static polystyrene
2. Surface resistivity $10^9 \Omega/\text{sq}$

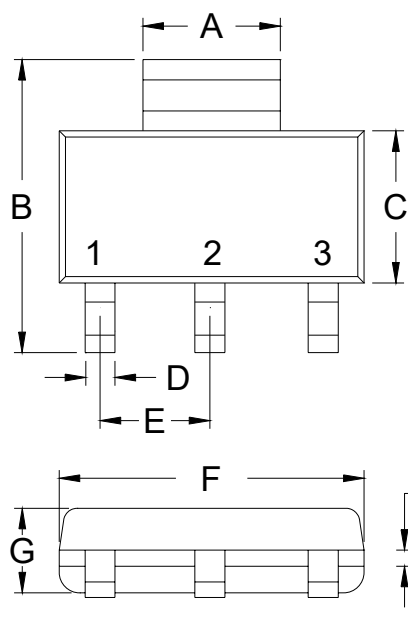
Carrier Tape Dimension



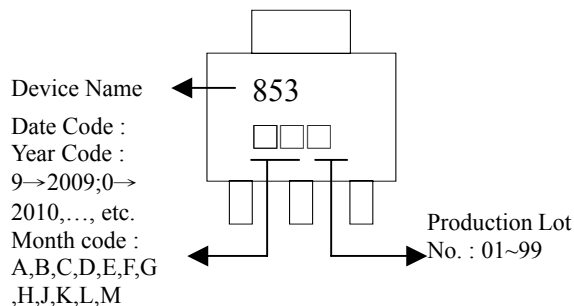
Symbol	A_o	B_o	K_o	P_o	P_1	P_2	T
Spec	6.83 ± 0.1	7.42 ± 0.1	1.88 ± 0.1	4.0 ± 0.1	8.0 ± 0.10	2.0 ± 0.05	0.292 ± 0.02
Symbol	E	F	D_o	D_1	W	$10P_o$	
Spec	1.75 ± 0.1	5.5 ± 0.05	1.60 ± 0.1	1.5 ± 0.25	$12^{+0.3}_{-0.1}$	40.0 ± 0.2	

Unit : mm

SOT-223 Dimension



Marking:



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

3-Lead SOT-223 Plastic
 Surface Mounted Package

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1142	0.1220	2.90	3.10	G	0.0551	0.0709	1.40	1.80
B	0.2638	0.2874	6.70	7.30	H	0.0098	0.0138	0.25	0.35
C	0.1299	0.1457	3.30	3.70	I	0.0008	0.0039	0.02	0.10
D	0.0236	0.0315	0.60	0.80	a1	*13°	-	*13°	-
E	*0.0906	-	*2.30	-	a2	0°	10°	0°	10°
F	0.2480	0.2638	6.30	6.70					