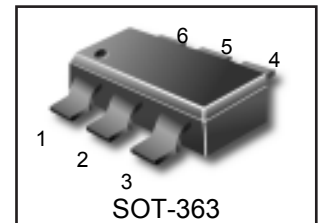


These transistors are designed for general purpose amplifier applications. They are housed in the SOT-363 which is designed for low power surface mount applications.

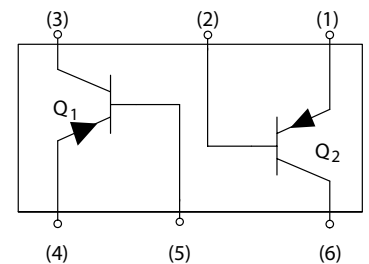
We declare that the material of product compliance with RoHS requirements.

- Device Marking:
 BC856ADW1T1= 3A
 BC856BDW1T1= 3B
 BC857BDW1T1= 3F
 BC857CDW1T1= 3G
 BC858BDW1T1= 3K
 BC858CDW1T1 = 3L



MAXIMUM RATINGS

Rating	Symbol	BC856	BC857	BC858	Unit
Collector–Emitter Voltage	V_{CEO}	–65	–45	–30	V
Collector–Base Voltage	V_{CBO}	–80	–50	–30	V
Emitter–Base Voltage	V_{EBO}	–5.0	–5.0	–5.0	V
Collector Current – Continuous	I_C	–100	–100	–100	mAdc

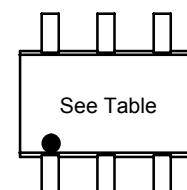


THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation Per Device	P_D	380	mW
FR–5 Board (Note 1.) $T_A = 25^\circ\text{C}$ Derate Above 25°C		250	
		3.0	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	328	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

1. FR–5 = 1.0 x 0.75 x 0.062 in

DEVICE MARKING



ORDERING INFORMATION

Device	Shipping
BC85xxDW1T1	3000/Tape & Reel

Dual General Purpose Transistors

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit	
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage ($I_C = -10\text{ mA}$)	BC856 Series BC857 Series BC858 Series	$V_{(BR)CEO}$	-65 -45 -30	- - -	- - -	V
Collector–Emitter Breakdown Voltage ($I_C = -10\text{ }\mu\text{A}$, $V_{EB} = 0$)	BC856 Series BC857 Series BC858 Series	$V_{(BR)CES}$	-80 -50 -30	- - -	- - -	V
Collector–Base Breakdown Voltage ($I_C = -10\text{ }\mu\text{A}$)	BC856 Series BC857 Series BC858 Series	$V_{(BR)CBO}$	-80 -50 -30	- - -	- - -	V
Emitter–Base Breakdown Voltage ($I_E = -1.0\text{ }\mu\text{A}$)	BC856 Series BC857 Series BC858 Series	$V_{(BR)EBO}$	-5.0 -5.0 -5.0	- - -	- - -	V
Collector Cutoff Current ($V_{CB} = -30\text{ V}$) ($V_{CB} = -30\text{ V}$, $T_A = 150^\circ\text{C}$)		I_{CBO}	- -	- -	-15 -4.0	nA μA
ON CHARACTERISTICS						
DC Current Gain ($I_C = -10\text{ }\mu\text{A}$, $V_{CE} = -5.0\text{ V}$)	BC856A BC856B, BC857B, BC858B BC857C, BC858C	h_{FE}	- - -	90 150 270	- - -	-
($I_C = -2.0\text{ mA}$, $V_{CE} = -5.0\text{ V}$)	BC856A BC856B, BC857B, BC858B BC857C, BC858C		125 220 420	180 290 520	250 475 800	
Collector–Emitter Saturation Voltage ($I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$) ($I_C = -100\text{ mA}$, $I_B = -5.0\text{ mA}$)		$V_{CE(sat)}$	- -	- -	-0.3 -0.65	V
Base–Emitter Saturation Voltage ($I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$) ($I_C = -100\text{ mA}$, $I_B = -5.0\text{ mA}$)		$V_{BE(sat)}$	- -	-0.7 -0.9	- -	V
Base–Emitter On Voltage ($I_C = -2.0\text{ mA}$, $V_{CE} = -5.0\text{ V}$) ($I_C = -10\text{ mA}$, $V_{CE} = -5.0\text{ V}$)		$V_{BE(on)}$	-0.6 -	- -	-0.75 -0.82	V
SMALL–SIGNAL CHARACTERISTICS						
Current–Gain – Bandwidth Product ($I_C = -10\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 100\text{ MHz}$)		f_T	100	-	-	MHz
Output Capacitance ($V_{CB} = -10\text{ V}$, $f = 1.0\text{ MHz}$)		C_{ob}	-	-	4.5	pF
Noise Figure ($I_C = -0.2\text{ mA}$, $V_{CE} = -5.0\text{ Vdc}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$, $BW = 200\text{ Hz}$)		NF	-	-	10	dB



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TYPICAL CHARACTERISTICS – BC856

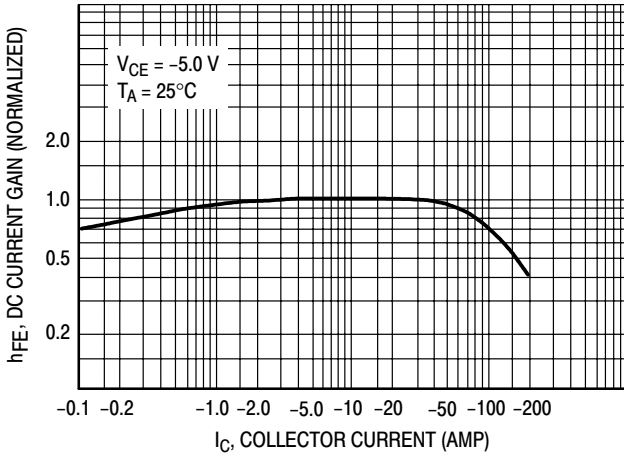


Figure 1. DC Current Gain

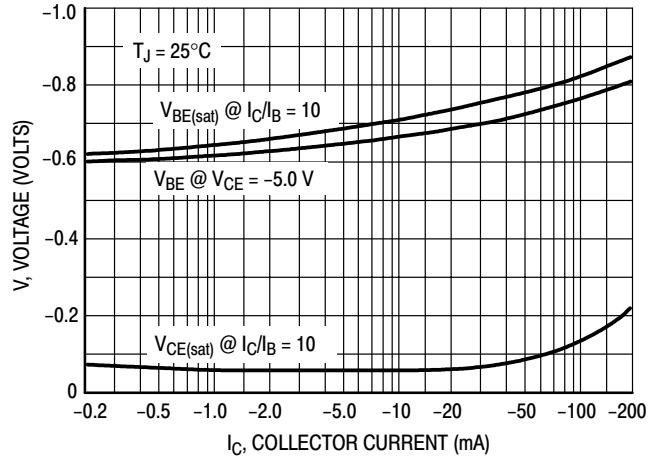


Figure 2. "On" Voltage

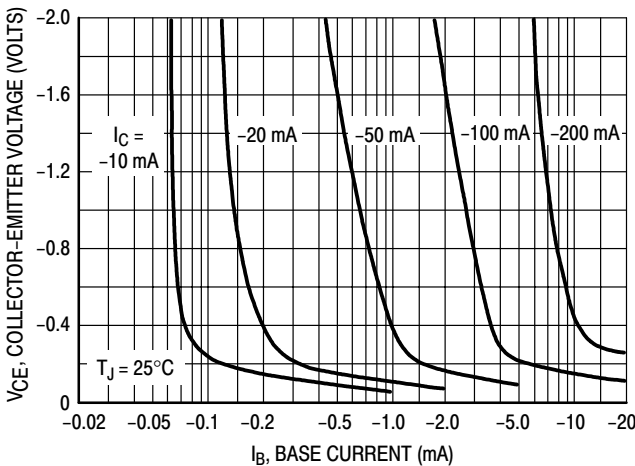


Figure 3. Collector Saturation Region

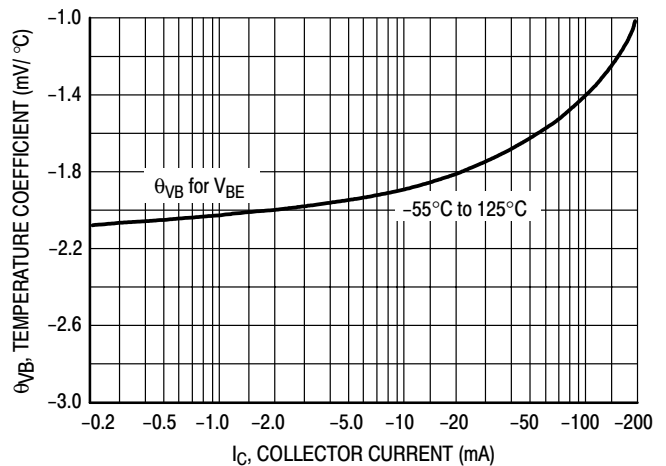


Figure 4. Base-Emitter Temperature Coefficient

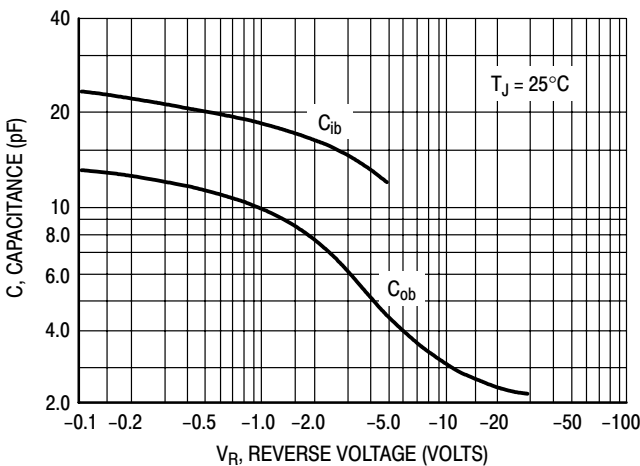


Figure 5. Capacitance

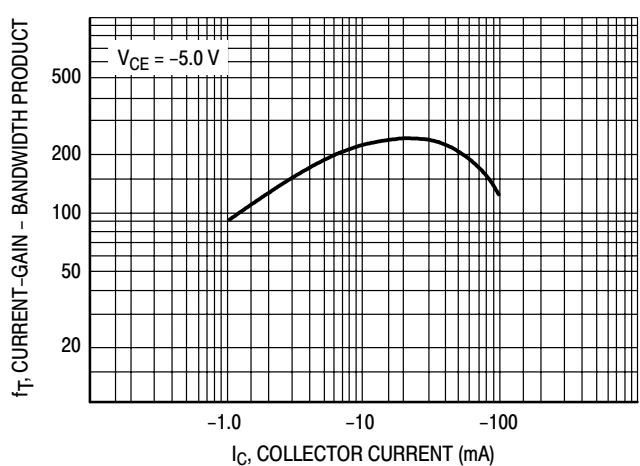


Figure 6. Current-Gain – Bandwidth Product



Dual General Purpose Transistors

TYPICAL CHARACTERISTICS – BC857/BC858

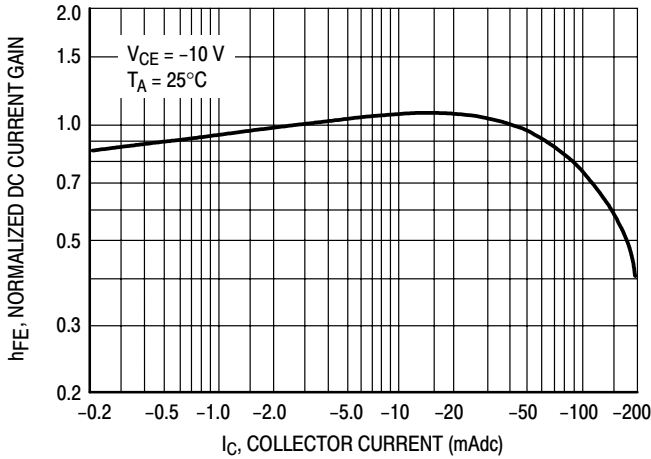


Figure 7. Normalized DC Current Gain

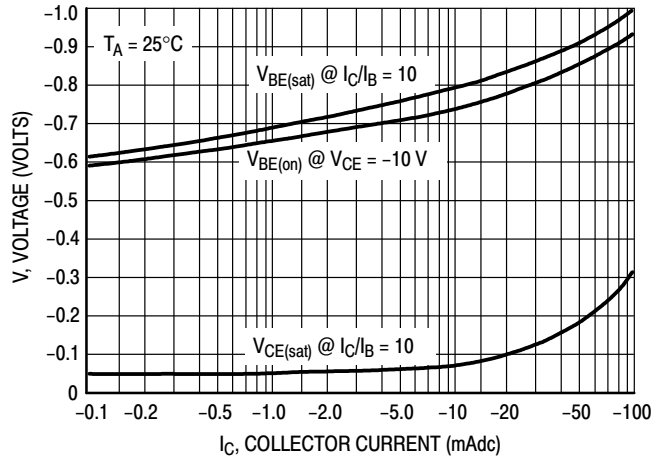


Figure 8. "Saturation" and "On" Voltages

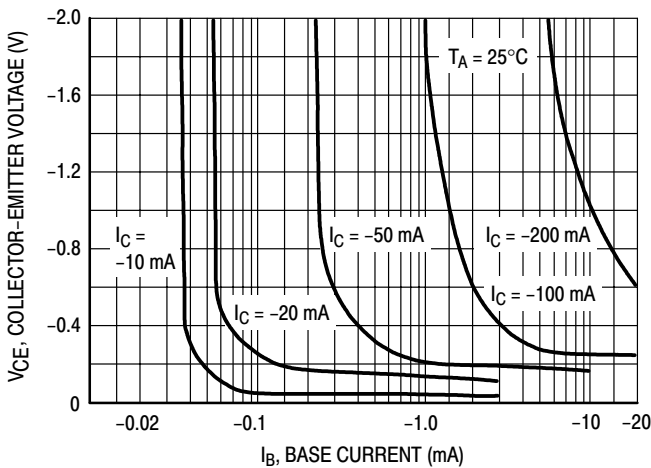


Figure 9. Collector Saturation Region

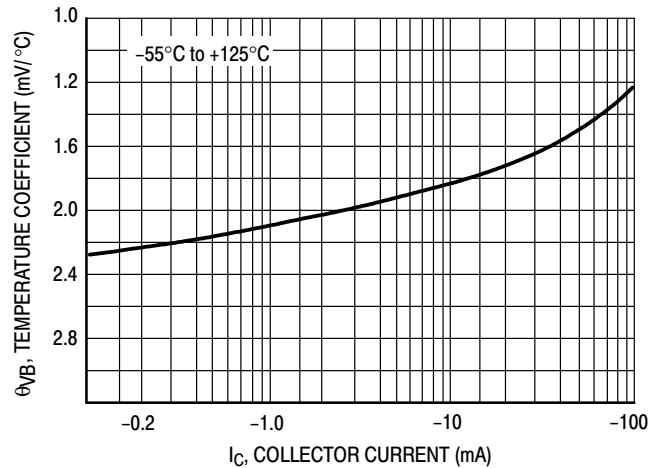


Figure 10. Base-Emitter Temperature Coefficient

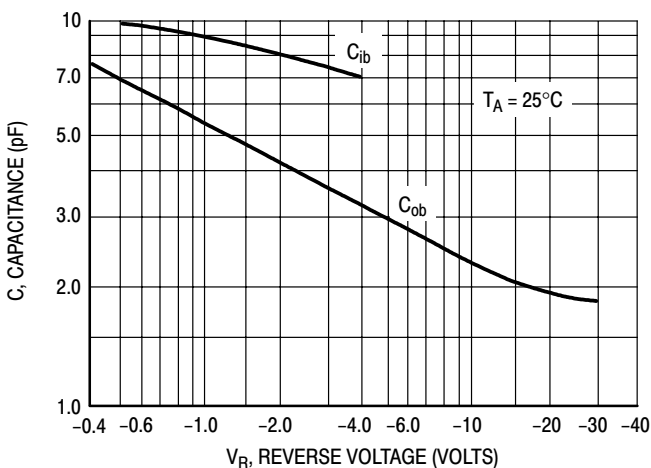


Figure 11. Capacitances

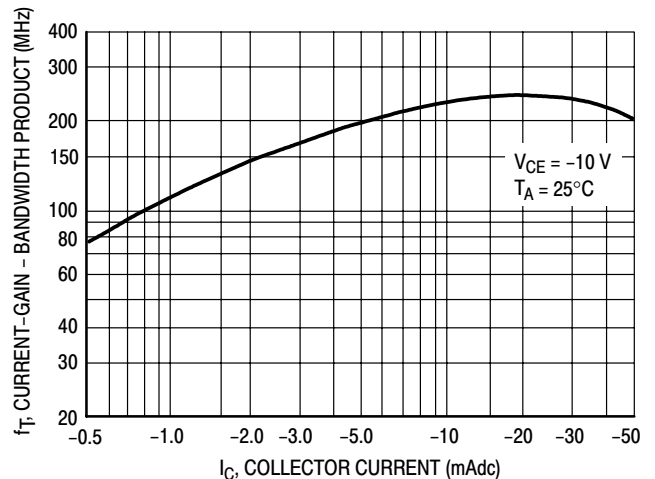


Figure 12. Current-Gain - Bandwidth Product

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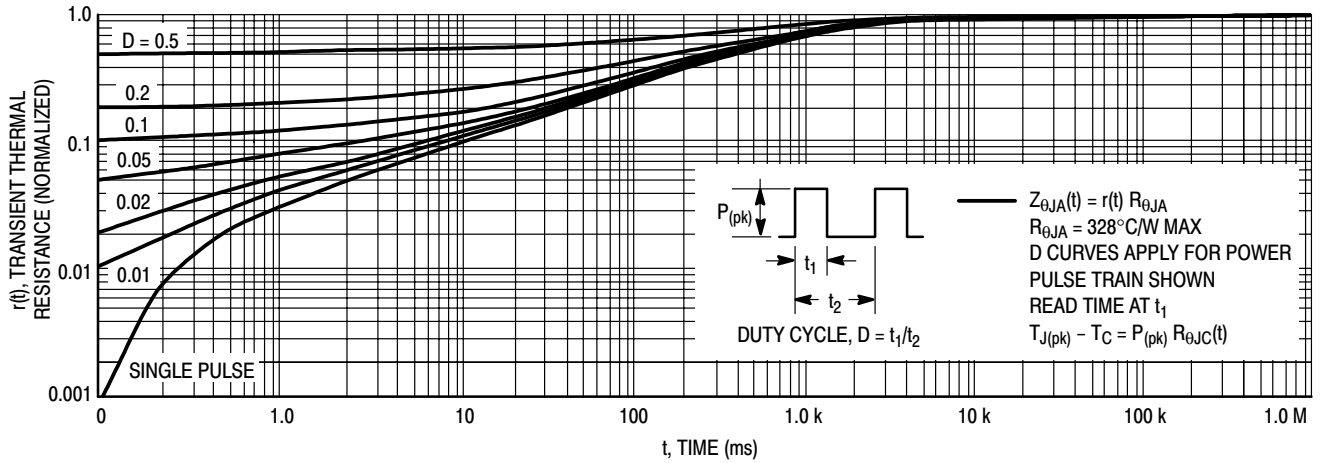


Figure 13. Thermal Response

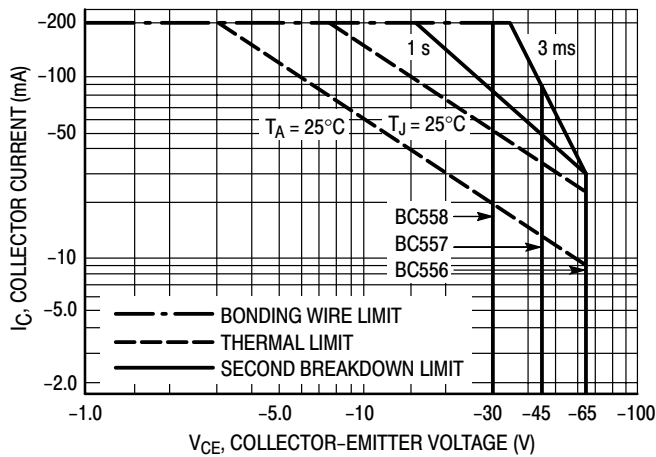


Figure 14. Active Region Safe Operating Area

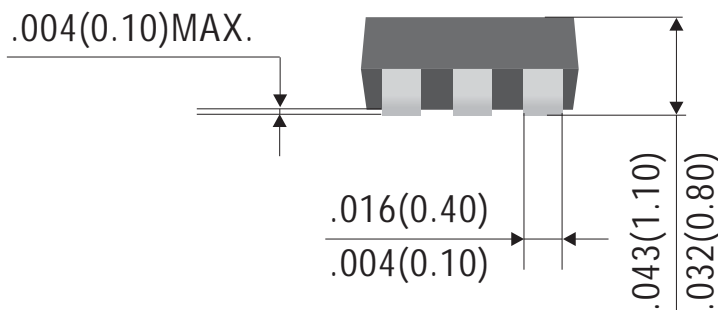
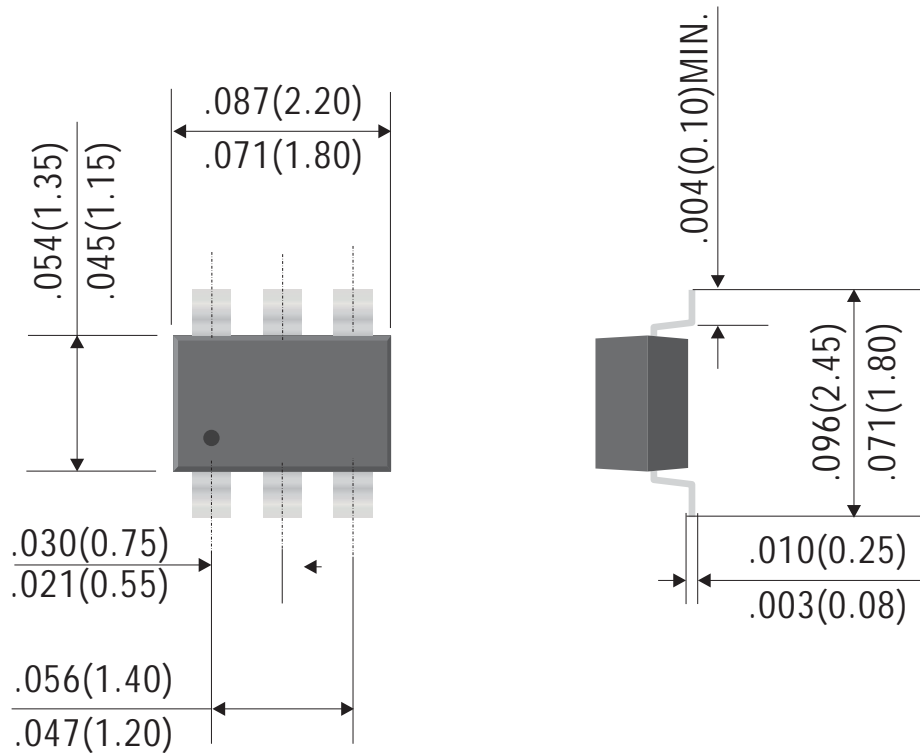
The safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

The data of Figure 14 is based upon $T_{J(pk)} = 150^{\circ}\text{C}$; T_C or T_A is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^{\circ}\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 13. At high case or ambient temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by the secondary breakdown.

Dual General Purpose Transistors

Outline Drawing

SOT-363



Dimensions in inches and (millimeters)



WILLAS



BC85xxDW1T1

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Ordering Information:

Device PN	Packing
Part Number G ⁽¹⁾ -WS	Tape&Reel: 3 Kpcs/Reel

Note: (1) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

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