SOT-23 Formed SMD Package

BC856 BC857 BC858

SILICON PLANAR EPITAXIAL TRANSISTORS

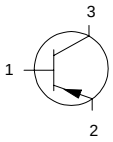
P–N–P transistors

Marking

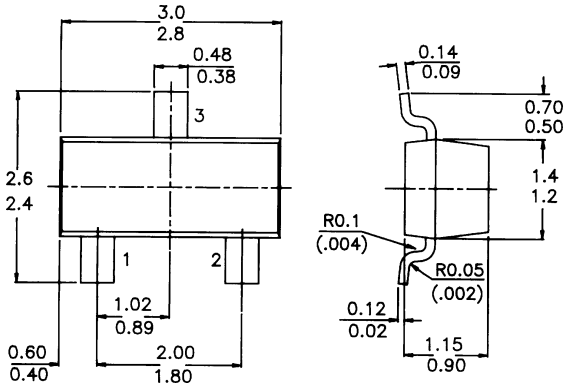
BC856 = 3D
BC856A = 3A
BC856B = 3B
BC857 = 3H
BC857A = 3E
BC857B = 3F
BC857C = 3G
BC858 = 3M
BC858A = 3J
BC858B = 3K
BC858C = 3L

Pin configuration

1 = BASE
2 = EMITTER
3 = COLLECTOR



PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



ABSOLUTE MAXIMUM RATINGS

			BC856	***BC857***	***BC858***	
Collector–emitter voltage (+V_{BE} = 1 V)	*$-V_{CEX}$*	*max.*	*80*	*50*	*30*	*V*
Collector–emitter voltage (open base)	*$-V_{CE0}$*	*max.*	*65*	*45*	*30*	*V*
Collector current (peak value)	*$-I_{CM}$*	*max.*		*200*		*mA*
Total power dissipation						
up to T_{amb} = 60 °C	*P_{tot}*	*max.*		*250*		mW
Junction temperature	*T_j*	*max.*		*150*		*° C*
Small–signal current gain						
$-I_C$ = 2 mA; $-V_{CE}$ = 5 V; f = 1 kHz	*h_{fe}*			*75 to 900*		
Transition frequency at f = 100 MHz						
$-I_C$ = 10 mA; $-V_{CE}$ = 5 V	*f_T*	>		*100*		MHz
Noise figure at R_S = 2 kW						
$-I_C$ = 200 mA; $-V_{CE}$ = 5 V						
f = 1 kHz; B = 200 Hz	*F*	<		*10*		*dB*

RATINGS *(at T_A = 25°C unless otherwise specified)*
Limiting values

			BC856	BC857	BC858	
Collector–base voltage (open emitter)	$-V_{CBO}$	*max.*	*80*	*50*	*30*	*V*
Collector–emitter voltage ($+V_{BE}$ = 1 V)	$-V_{CEX}$	*max.*	*80*	*50*	*30*	*V*
Collector–emitter voltage (open base)	$-V_{CEO}$	*max.*	*65*	*45*	*30*	*V*
Emitter–base voltage (open collector)	$-V_{EBO}$	*max.*	*5*	*5*	*5*	*V*
Collector current (d.c.)	$-I_C$	*max.*		*100*		*mA*
Collector current (peak value)	$-I_{CM}$	*max.*		*200*		*mA*
Emitter current (peak value)	I_{EM}	*max.*		*200*		*mA*
Base current (peak value)	$-I_{BM}$	*max.*		*200*		*mA*
Total power dissipation up to T_{amb}; 60 °C	P_{tot}	*max.*		*250*		mW
Storage temperature	T_{stg}			*–55 to +150*		*°C*
Junction temperature	T_j	*max.*		*150*		*°C*

THERMAL CHARACTERISTICS
$T_j = P_x (R_{th\ j-t} + R_{th\ t-s} + R_{th\ s-a}) + T_{amb}$
Thermal resistance

From junction to tab	$R_{th\ j-t}$	=	*60*	KW
From tab to soldering points	$R_{th\ t-s}$	=	*280*	KW
From soldering points to ambient	$R_{th\ s-a}$	=	*90*	KW

CHARACTERISTICS
T_j *= 25 °C unless otherwise specified*
Collector cut–off current

$I_E = 0; -V_{CB} = 30V;$ T_j = 25°C	$-I_{CBO}$	*typ.*	*1*	*nA*
		<	*15*	*nA*
T_j = 150° C	$-I_{CBO}$	<	*4*	mA
Base–emitter voltage				
$-I_C$ = 2 mA; $-V_{CE}$ = 5 V	$-V_{BE}$	*typ.*	*650*	*mV*
			600 to 750	*mV*
$-I_C$ = 10 mA; $-V_{CE}$ = 5 V	$-V_{BE}$	<	*820*	*mV*
Saturation voltages				
$-I_C$ = 10 mA; $-I_B$ = 0,5 mA	$-V_{CEsat}$	*typ.*	*75*	*mV*
		<	*300*	*mV*
	$-V_{BEsat}$	*typ.*	*700*	*mV*
$-I_C$ = 100 mA; $-I_B$ = 5 mA	$-V_{CEsat}$	*typ.*	*250*	*mV*
		<	*650*	*mV*
	$-V_{BEsat}$	*typ.*	*850*	*mV*
Knee voltage				
$-I_C$ = 10 mA; $-I_B$ = value for which $-I_C$ = 11 mA at $-V_{CE}$ = 1 V	$-V_{CEK}$	*typ.*	*250*	*mV*
		<	*600*	*mV*

Collector capacitance at f = 1 MHz			
$I_E = I_e = 0; -V_{CB} = 10$ V	C_c	typ.	4,5 pF
Transition frequency at f = 100 MHz			
$-I_C = 10$ mA; $-V_{CE} = 5$ V	f_T	>	100 MHz
Small–signal current gain at f = 1 kHz			
$-I_C = 2$ mA; $-V_{CE} = 5$ V	h_{fe}	125 to 800	
Noise figure at $R_S = 2$ kΩ			
$-I_C = 200$ µA; $-V_{CE} = 5$ V			
$f = 1$ kHz; B = 200 Hz	F	typ.	2 dB
		<	10 dB
D.C. current gain			
$-I_C = 2$ mA; $-V_{CE} = 5$ V BC856	h_{FE}	220 to 475	
BC858/857	h_{FE}	125 to 800	
BC856A/857A/858A	h_{FE}	125 to 250	
BC856B/857B/858B	h_{FE}	220 to 475	
BC857C/858C	h_{FE}	420 to 800	

Disclaimer

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