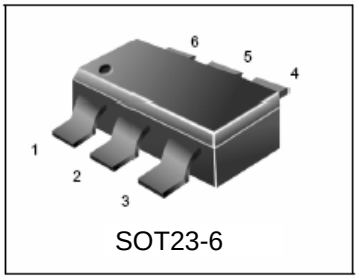
Dual General Purpose Transistors

NPN/PNP Duals

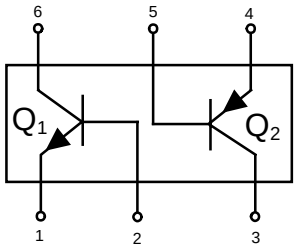
LBC817-16DPMT1G
LBC817-25DPMT1G
LBC817-40DPMT1G

S-LBC817-16DPMT1G
S-LBC817-25DPMT1G
S-LBC817-40DPMT1G

- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.



SOT23-6



MAXIMUM RATING – NPN

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	45	V
Collector – Base Voltage	V_{CBO}	50	V
Emitter – Base Voltage	V_{EBO}	5.0	V
Collector Current – Continuous	I_C	500	mAdc

MAXIMUM RATING – PNP

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	–45	V
Collector – Base Voltage	V_{CBO}	–50	V
Emitter – Base Voltage	V_{EBO}	–5.0	V
Collector Current – Continuous	I_C	–500	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board, (Note 1) T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (Note 2) T_A = 25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J, T_{stg}	–55 to +150	°C

1. FR–5 = 1.0 x 0.75 x 0.062 in.
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

ORDERING INFORMATION

DEVICE	MARKING	SHIPPING
LBC817–16DPMT1G S-LBC817–16DPMT1G	56A	3000/Tape & Reel
LBC817–16DPMT3G S-LBC817–16DPMT3G	56A	10,000/Tape & Reel
LBC817–25DPMT1G S-LBC817–25DPMT1G	56B	3000/Tape & Reel
LBC817–25DPMT3G S-LBC817–25DPMT3G	56B	10,000/Tape & Reel
LBC817–40DPMT1G S-LBC817–40DPMT1G	56C	3000/Tape & Reel
LBC817–40DPMT3G S-LBC817–40DPMT3G	56C	10,000/Tape & Reel

ELECTRICAL CHARACTERISTICS(NPN) (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector – Emitter Breakdown Voltage (I_C = 10 mA)		$V_{(BR)CEO}$	45	–	–	V
Collector – Emitter Breakdown Voltage (V_{EB} = 0, I_C = 10 μA)		$V_{(BR)CES}$	50	–	–	V
Emitter – Base Breakdown Voltage (I_E = 1.0 μA)		$V_{(BR)EBO}$	5.0	–	–	V
Collector Cutoff Current		I_{CBO}				
(V_{CB} = 20 V)			–	–	100	nA
(V_{CB} = 20 V, T_A = 150°C)			–	–	5.0	μA
ON CHARACTERISTICS						
DC Current Gain		h_{FE}				–
(I_C = 100 mA, V_{CE} = 1.0 V)	BC817–16		100	–	250	
	BC817–25		160	–	400	
	BC817–40		250	–	600	
(I_C = 500 mA, V_{CE} = 1.0 V)			40	–	–	
Collector – Emitter Saturation Voltage (I_C = 500 mA, I_B = 50 mA)		$V_{CE(sat)}$	–	–	0.7	V
Base – Emitter On Voltage (I_C = 500 mA, V_{CE} = 1.0 V)		$V_{BE(on)}$	–	–	1.2	V
SMALL–SIGNAL CHARACTERISTICS						
Current – Gain – Bandwidth Product (I_C = 10 mA, V_{CE} = 5.0 Vdc, f = 100 MHz)		f_T	100	–	–	MHz
Output Capacitance (V_{CB} = 10 V, f = 1.0 MHz)		C_{obo}	–	10	–	pF

ELECTRICAL CHARACTERISTICS(PNP) (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector – Emitter Breakdown Voltage (I_C = –10 mA)		$V_{(BR)CEO}$	–45	–	–	V
Collector – Emitter Breakdown Voltage (V_{EB} = 0, I_C = –10 μA)		$V_{(BR)CES}$	–50	–	–	V
Emitter – Base Breakdown Voltage (I_E = –1.0 μA)		$V_{(BR)EBO}$	–5.0	–	–	V
Collector Cutoff Current		I_{CBO}				
(V_{CB} = –20 V)			–	–	–100	nA
(V_{CB} = –20 V, T_J = 150°C)			–	–	–5.0	μA
ON CHARACTERISTICS						
DC Current Gain		h_{FE}				–
(I_C = –100 mA, V_{CE} = –1.0 V)	BC807–16		100	–	250	
	BC807–25		160	–	400	
	BC807–40		250	–	600	
(I_C = –500 mA, V_{CE} = –1.0 V)			40	–	–	
Collector – Emitter Saturation Voltage (I_C = –500 mA, I_B = –50 mA)		$V_{CE(sat)}$	–	–	–0.7	V
Base – Emitter On Voltage (I_C = –500 mA, I_B = –1.0 V)		$V_{BE(on)}$	–	–	–1.2	V
SMALL–SIGNAL CHARACTERISTICS						
Current – Gain – Bandwidth Product (I_C = –10 mA, V_{CE} = –5.0 Vdc, f = 100 MHz)		f_T	100	–	–	MHz
Output Capacitance (V_{CB} = –10 V, f = 1.0 MHz)		C_{obo}	–	10	–	pF

TYPICAL NPN CHARACTERISTICS

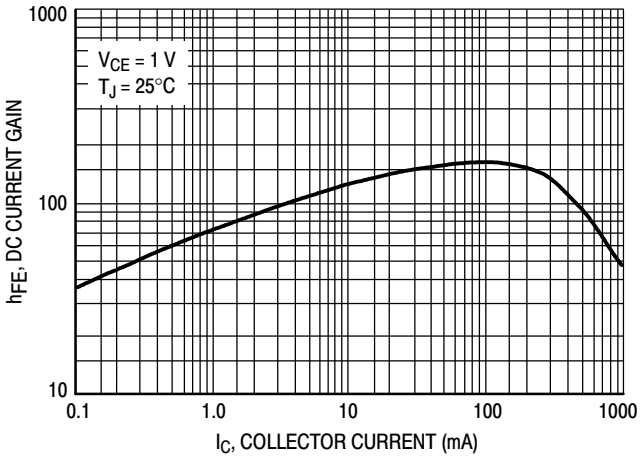


Figure 1. DC Current Gain

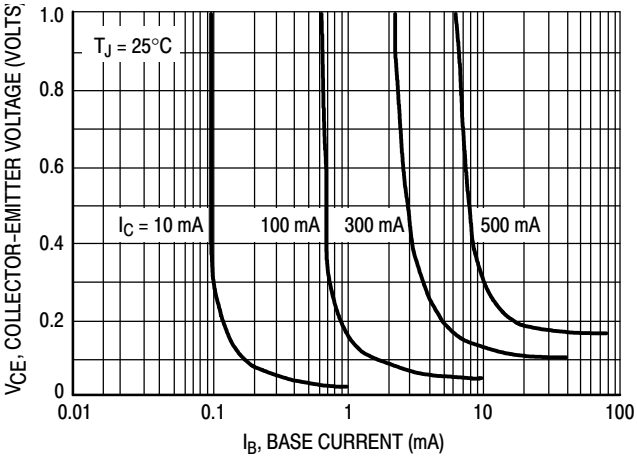


Figure 2. Saturation Region

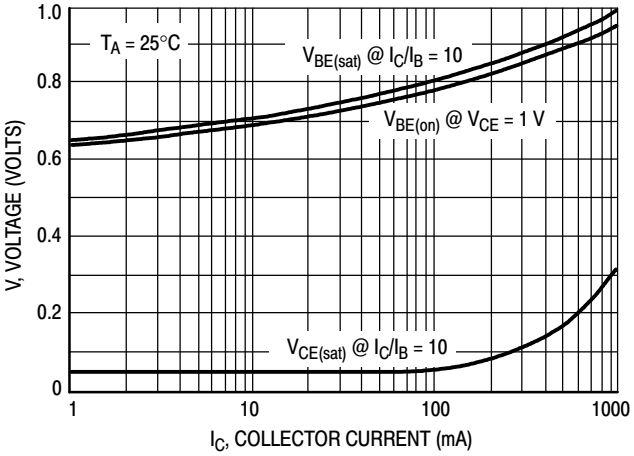


Figure 3. “On” Voltages

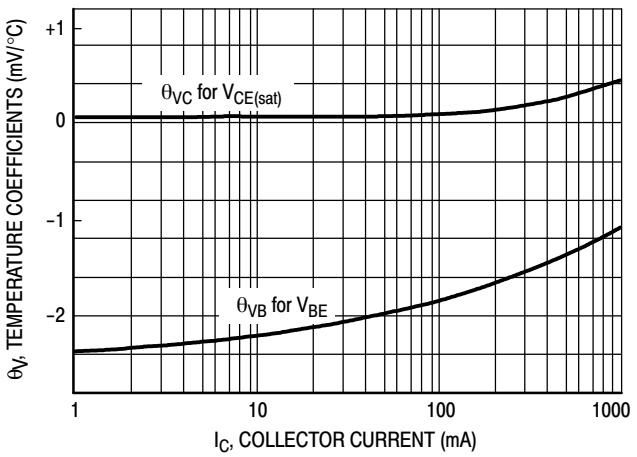


Figure 4. Temperature Coefficients

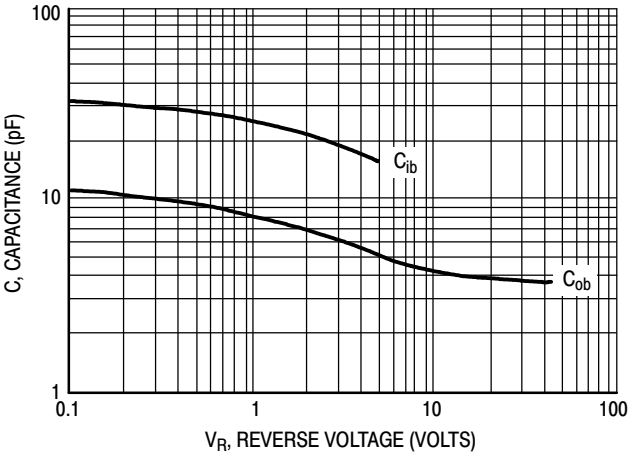


Figure 5. Capacitances

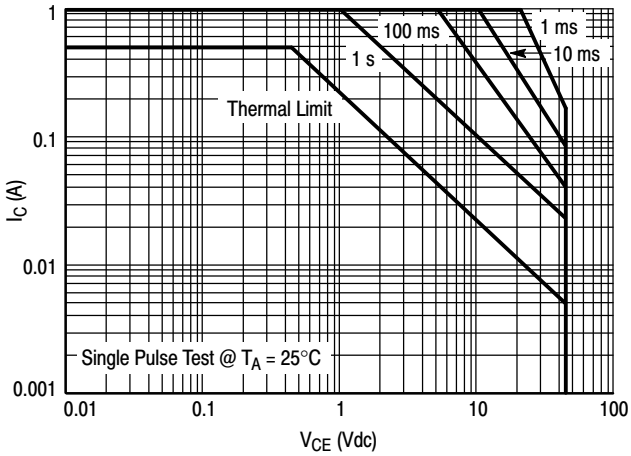


Figure 6. BC817–40L Safe Operating Area

TYPICAL PNP CHARACTERISTICS

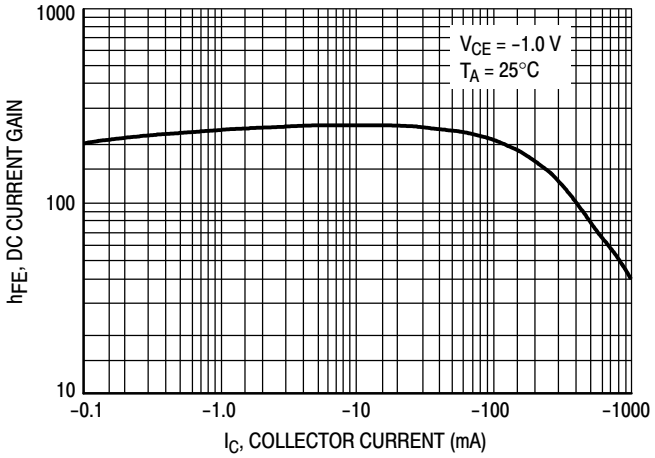


Figure 1. DC Current Gain

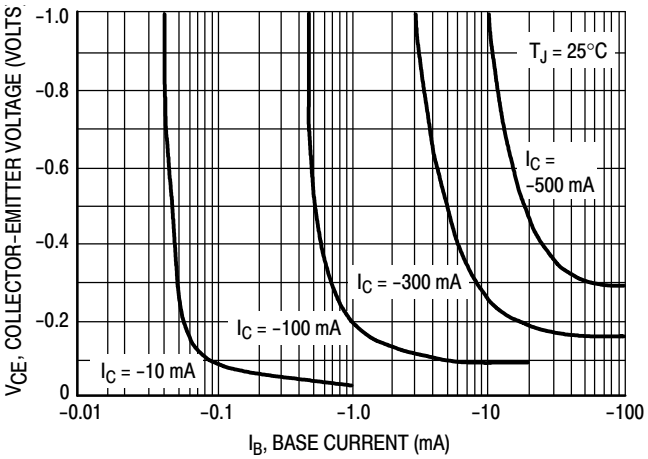


Figure 2. Saturation Region

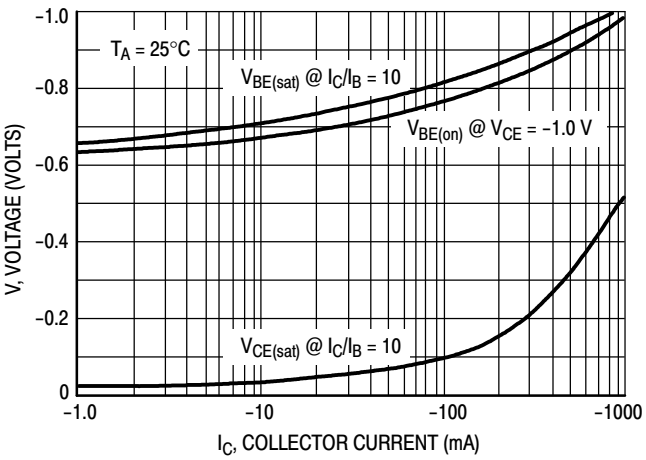


Figure 3. "On" Voltages

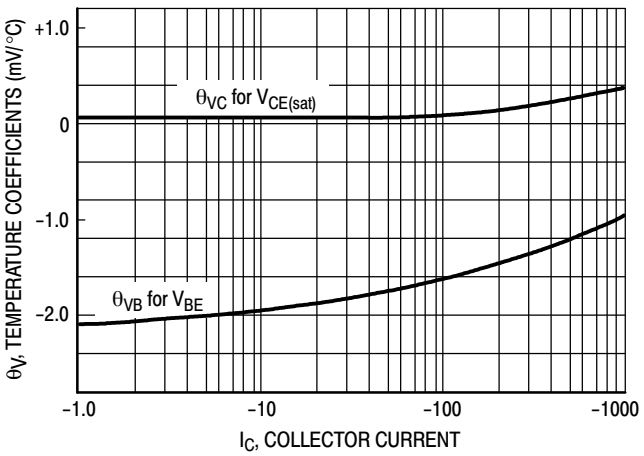


Figure 4. Temperature Coefficients

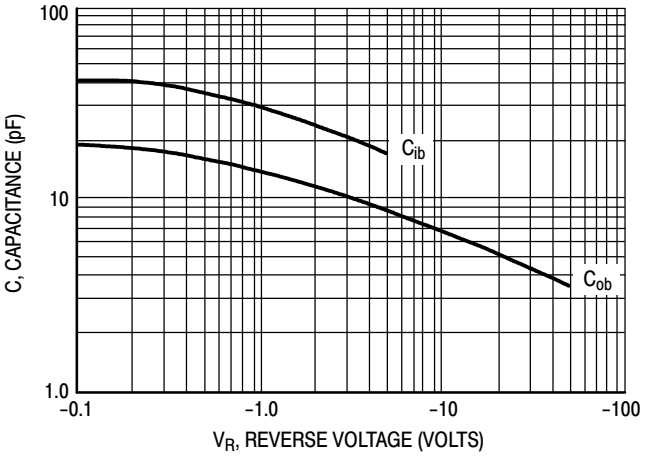
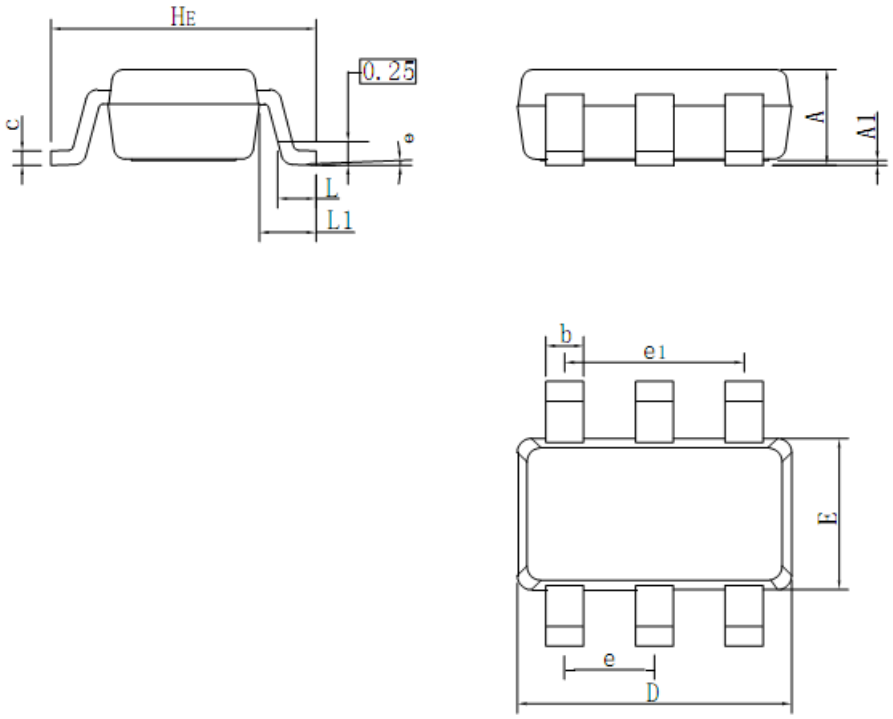


Figure 5. Capacitances

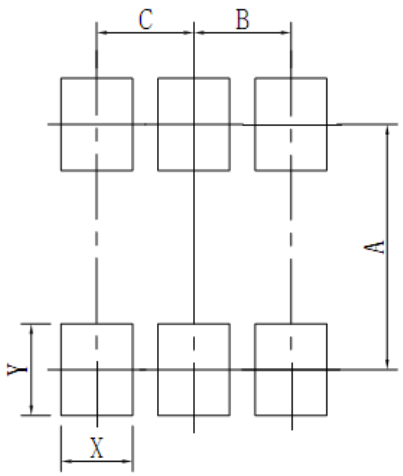
OUTLINE AND DIMENSIONS

SOT23-6



SOT23-6			
DIM	MIN	NOR	MAX
A	0.90	1.00	1.10
A1	0.01	0.06	0.10
b	0.25	0.40	0.50
c	0.10	0.17	0.26
D	2.80	2.90	3.10
E	1.30	1.60	1.70
e	0.85	0.95	1.05
e1	1.80	1.90	2.00
L	0.20	0.40	0.60
L1	0.60REF		
HE	2.50	2.80	3.00
θ	0°	-	10°

SOLDERING FOOTPRINT



SOT23-6	
DIM	(mm)
X	0.70
Y	0.90
A	2.40
B	0.95
C	0.95