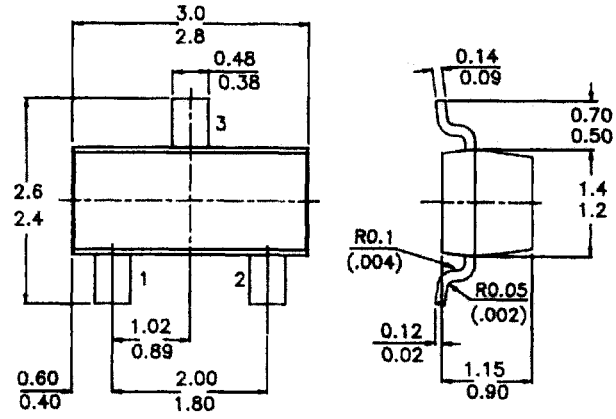
N–P–N SMALL–SIGNAL DARLINGTON TRANSISTORS

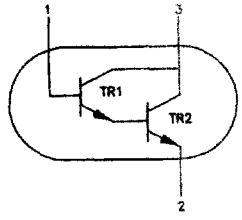
N–P–N transistors

Marking
CMBTA13 = 1M
CMBTA14 = 1N

PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



Pin configuration
1 = BASE
2 = EMITTER
3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

Collector–emitter voltage (open base)					
V_{BE} = 0		V_{CES}	max.	30	V
Collector current (d.c.)		I_C	max.	300	mA
Total power dissipation up to T_{amb} = 25°C		P_{tot}	max.	250	mW
Junction temperature		T_j	max.	150	°C
D.C. current gain					
I_C = 10 mA; V_{CE} = 5 V	CMBTA13	h_{FE}	min.	5000	
	CMBTA14	h_{FE}	min.	10000	
Transition frequency at f = 100 MHz					
I_C = 10 mA; V_{CE} = 5 V		f_T	min.	125	MHz

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

Limiting values				
Collector–base voltage (open emitter)				
V_{BE} = 0	V_{CBO}	max.	30	V
Collector–emitter voltage (open base)				
V_{BE} = 0	V_{CES}	max.	30	V
Emitter–base voltage (open collector)	V_{EBO}	max.	10	V
Collector current (d.c.)	I_C	max.	300	mA
Total power dissipation up to T_{amb} = 25°C	P_{tot}	max.	250	mW
Storage temperature	T_{stg}	−55 to +150		°C
Junction temperature	T_j	max.	150	°C

THERMAL RESISTANCE

from junction to ambient	$R_{th\ j-a}$		500	K/W

CHARACTERISTICS (at T_A = 25°C unless otherwise specified)

Collector–emitter breakdown voltage					
I_C = 100 µA		$V_{(BR)CES}$	min.	30	V
Emitter–base cut–off current					
V_{BE} = 10 V		I_{EBO}	max.	0.1	µA
Collector–base cut–off current					
V_{CB} = 30 V		I_{CBO}	max.	0.1	µA
D.C. current gain					
I_C = 10 mA; V_{CE} = 5 V	CMBTA13	h_{FE}	min.	5000	
	CMBTA14	h_{FE}	min.	10000	
I_C = 100 mA; V_{CE} = 5 V	CMBTA13	h_{FE}	min.	10000	
	CMBTA14	h_{FE}	min.	20000	
Collector–emitter saturation voltage					
IC = 100 mA; I_B = 0.1 mA		V_{CEsat}	max.	1.5	V
Base–emitter On voltage					
I_C = 100 mA; V_{CE} = 5 V;		$V_{BE(on)}$	max.	2	V
Transition frequency at f = 100 MHz					
I_C = 10 mA; V_{CE} = 5 V		f_T	min.	125	MHz