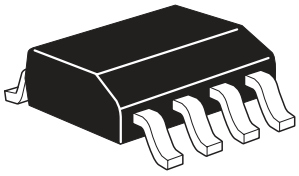
ZDT1048
SM-8 Dual NPN medium power high gain transistors

Summary



BV_{CEO} > 17.5V

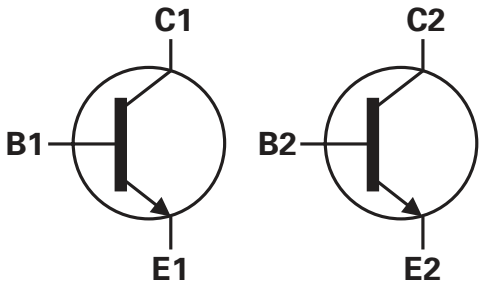
$I_{C(cont)}$ = 5A

$V_{CE(sat)}$ < 75mV @ 1A

P_D = 2.75W

Description

Advanced process capability has been used to achieve this high performance device. Combining two NPN transistors in the SM-8 package provides a compact solution for the intended applications.



Features

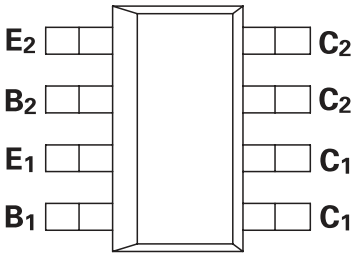
- Dual NPN device
- Very low saturation voltage
- High gain
- SM 8 package

Applications

- CCFL invertors
- Royer circuits

Ordering information

DEVICE	Reel size (inches)	Tape width (mm)	Quantity per reel
ZDT1048TA	7	12	1000



Device marking

T1048

Absolute maximum ratings

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	17.5	V
Emitter-base voltage	V_{EBO}	5	V
Peak pulse current	I_{CM}	20	A
Continuous collector current	I_C	5	A
Base current	I_B	500	mA
Operating and storage temperature range	T_j:T_{stg}	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total power dissipation at T_{amb} = 25°C*	P_{tot}		
Any single die "on"		2.25	W
Both die "on" equally		2.75	W
Derate above 25°C*			V
Any single die "on"		18	mW/°C
Both die "on" equally		22	mW/°C
Thermal resistance - junction to ambient*			
Any single die "on"		55.6	°C/W
Both die "on" equally		45.5	°C/W

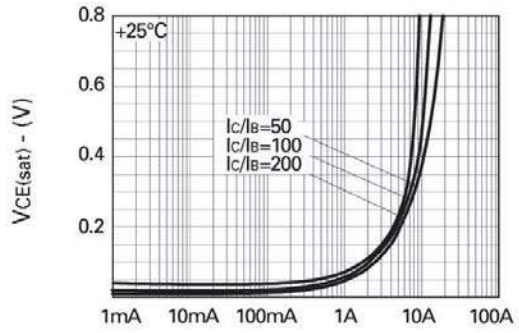
* The power which can be dissipated assuming the device is mounted in a typical manner on a PCB with copper equal to 2 inches square.

Electrical characteristics (at T_{amb} = 25°C unless otherwise stated).

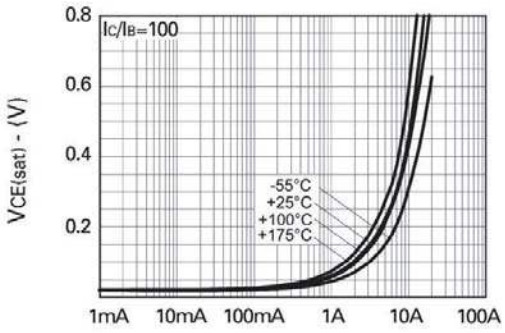
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	50	85		V	I_C=100µA
Collector-emitter breakdown voltage	V_{CES}	50	85		V	I_C=100µA
Collector-emitter breakdown voltage	V_{CEO}	17.5	24		V	I_C=10mA
Collector-emitter breakdown voltage	V_{CEV}	50	85		V	I_C=100µA, V_{EB}=1V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	8.7		V	I_E=100µA
Collector cut-off current	I_{CBO}		0.3	10	nA	V_{CB}=35V
Emitter cut-off current	I_{EBO}		0.3	10	nA	V_{EB}=4V
Collector-emitter cut-off current	I_{CES}		0.3	10	nA	I_{CES}=35V
Collector-emitter saturation voltage	$V_{CE(sat)}$		27 55 120 200 200	45 75 160 240 300	mV mV mV mV mV	I_C=0.5A, I_B=10mA (*) I_C=1A, I_B=10mA(*) I_C=2A, I_B=10mA(*) I_C=5A, I_B=100mA(*) I_C=5A, I_B=50mA(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		1000	1100	mV	I_C=5A, I_B=100mA(*)
Base-emitter turn on voltage	$V_{BE(on)}$		900	1000	mV	I_C=5A, V_{CE}=2V(*)
Static forward current transfer ratio	h_{FE}	280 300 300 250 50	440 450 450 300 80	1200		I_C=10mA, V_{CE}=2V(*) I_C=0.5A, V_{CE}=2V(*) I_C=1A, V_{CE}=2V(*) I_C=5A, V_{CE}=2V(*) I_C=20A, V_{CE}=2V(*)
Transition frequency	f_T		150		MHz	I_C=50mA, V_{CE}=10V f=50MHz
Output capacitance	C_{obo}		60	80	pF	V_{CB}=10V, f=1MHz
Switching times	t_{on}		120		ns	I_C=4A, I_B=40mA,V_{CC}=10V
	t_{off}		250		ns	I_C=4A, I_B=±40mA,V_{CC}=10V

NOTES:
(*) Measured under pulsed conditions. Pulse width=300µs. Duty cycle ≤ 2%

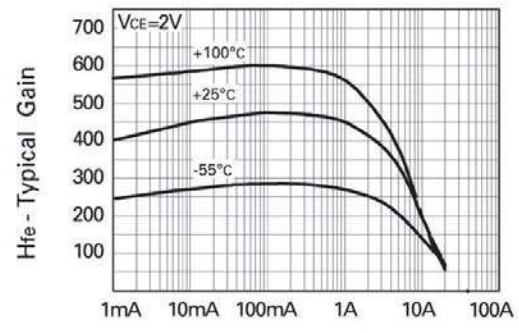
Typical characteristics



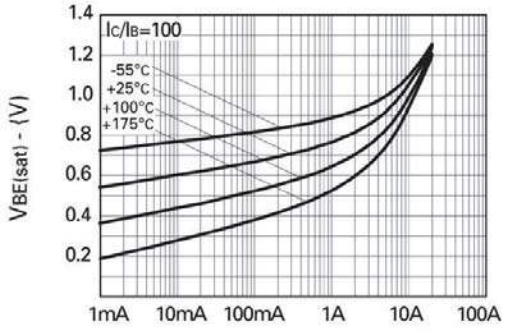
VCE(sat) v IC



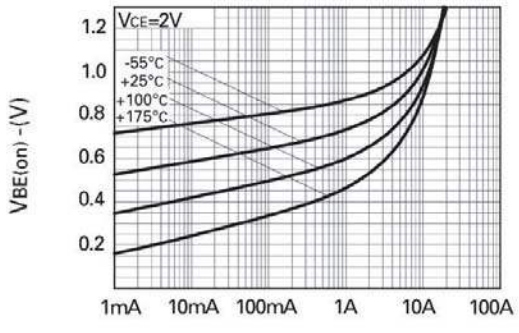
VCE(sat) v IC



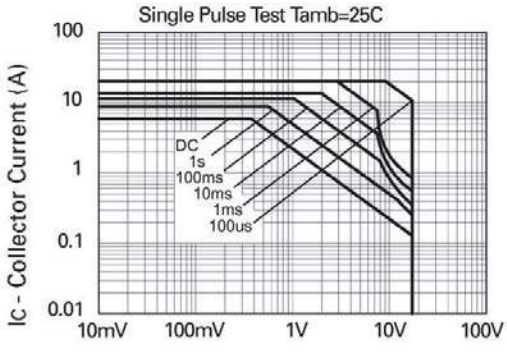
hFE v IC



VBE(sat) v IC

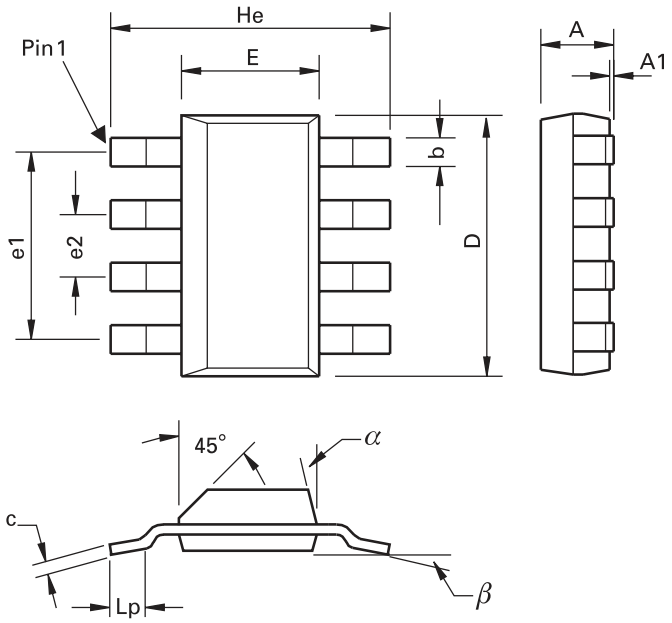


VBE(on) v IC



Safe Operating Area

Package outline - SM8



DIM	Millimeters			Inches			DIM	Millimeters			Inches		
	Min.	Max.	Typ.	Min.	Max.	Typ.		Min.	Max.	Typ.	Min.	Max.	Typ.
A	-	1.7	-	-	0.067	-	e1	-	-	4.59	-	-	0.1807
A1	0.02	0.1	-	0.0008	0.004	-	e2	-	-	1.53	-	-	0.0602
b	-	-	0.7	-	-	0.0275	He	6.7	7.3	-	0.264	0.287	-
c	0.24	0.32	-	0.009	0.013	-	Lp	0.9	-	-	0.035	-	-
D	6.3	6.7	-	0.248	0.264	-	α	-	15°	-	-	15°	-
E	3.3	3.7	-	0.130	0.145	-	β	-	-	10°	-	-	10°

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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