

ZDT1048

SM-8 Dual NPN medium power high gain transistors

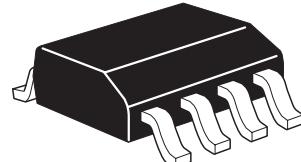
Summary

$BV_{CEO} > 17.5V$

$I_C(\text{cont}) = 5A$

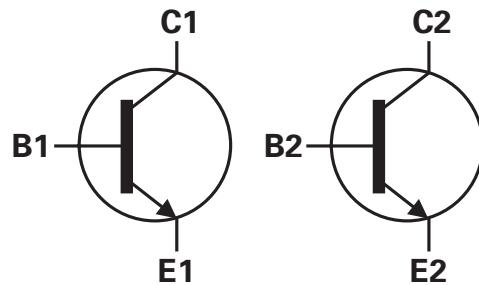
$V_{CE(\text{sat})} < 75mV @ 1A$

$P_D = 2.75W$



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

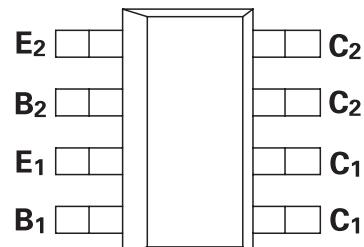
- Dual NPN device
- Very low saturation voltage
- High gain
- SM 8 package

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 $T_{amb} = 25^\circ C$ *	P_{tot}		
Any single die "on"		2.25	W
Both die "on" equally		2.75	W
Derate above $25^\circ C$ *			V
Any single die "on"		18	$mW/^\circ C$
Both die "on" equally		22	$mW/^\circ C$
Thermal resistance - junction to ambient*			
Any single die "on"		55.6	$^\circ C/W$
Both die "on" equally		45.5	$^\circ C/W$

* 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.

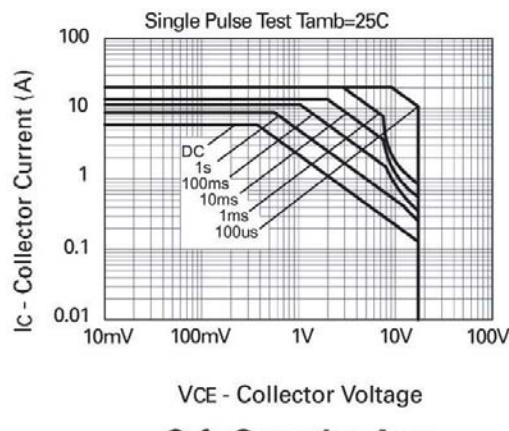
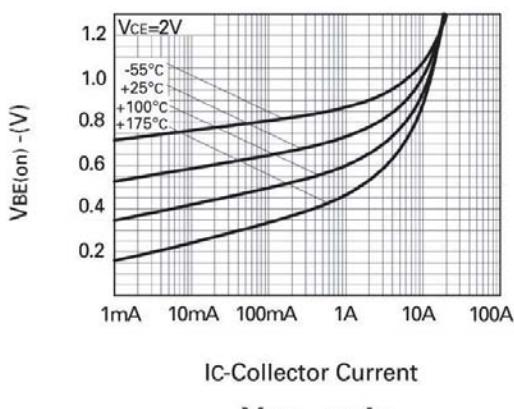
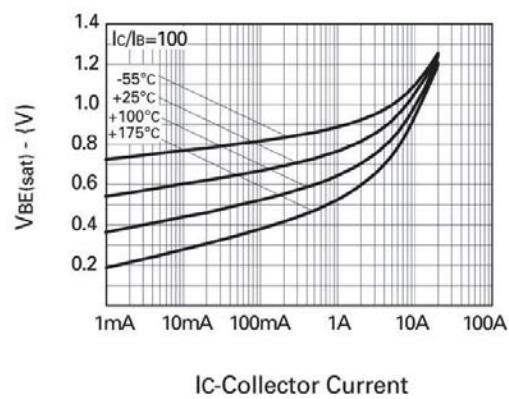
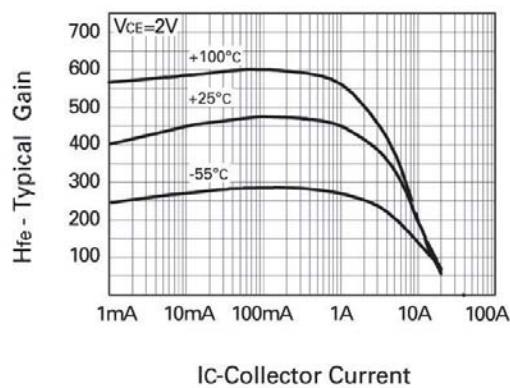
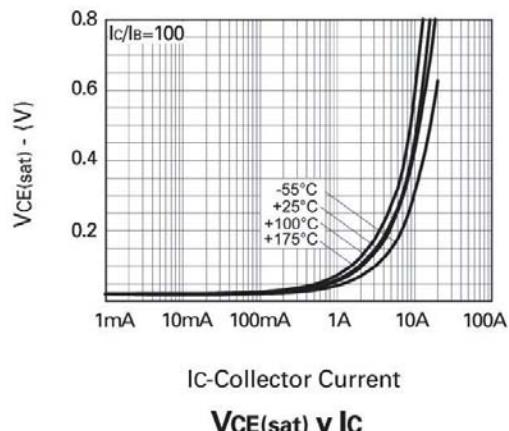
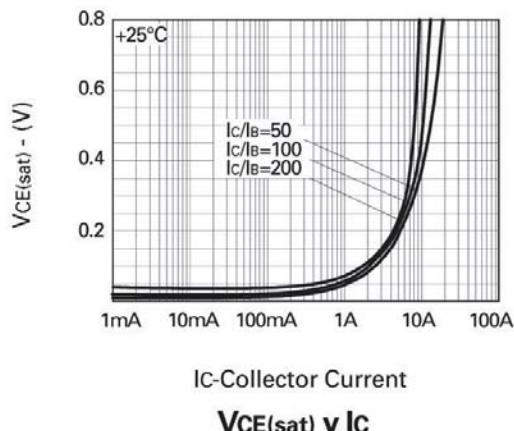
Electrical characteristics (at $T_{amb} = 25^\circ C$ unless otherwise stated).

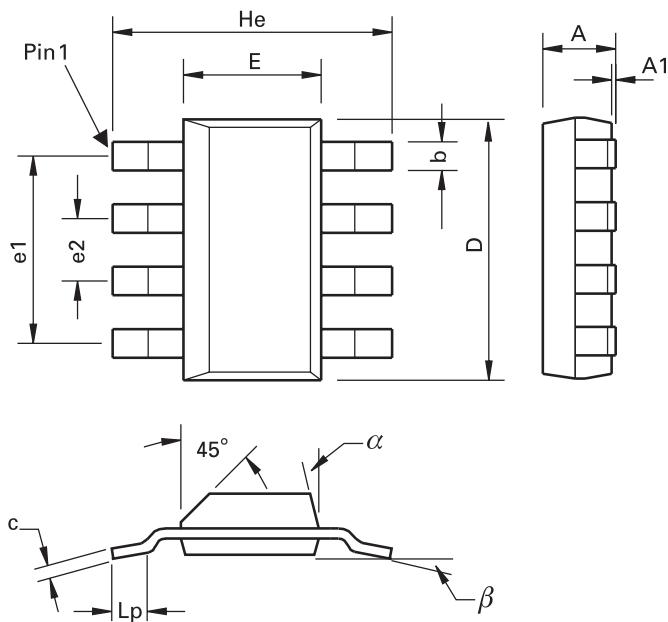
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	50	85		V	$I_C=100\mu A$
Collector-emitter breakdown voltage	V_{CES}	50	85		V	$I_C=100\mu A$
Collector-emitter breakdown voltage	V_{CEO}	17.5	24		V	$I_C=10mA$
Collector-emitter breakdown voltage	V_{CEV}	50	85		V	$I_C=100\mu A, V_{EB}=1V$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	8.7		V	$I_E=100\mu A$
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	$I_C=0.5A, I_B=10mA^{(*)}$ $I_C=1A, I_B=10mA^{(*)}$ $I_C=2A, I_B=10mA^{(*)}$ $I_C=5A, I_B=100mA^{(*)}$ $I_C=5A, I_B=50mA^{(*)}$
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	$I_C=4A, I_B=\pm 40mA, V_{CC}=10V$

NOTES:

(*) Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

Typical characteristics



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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