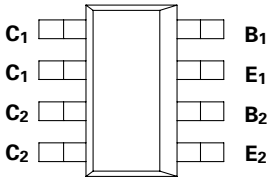
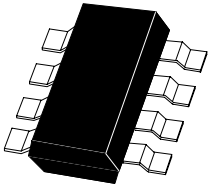
SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

ISSUE 2 - FEBRUARY 1996

ZDT1048



PARTMARKING DETAIL – T1048



SM-8
(8 LEAD SOT223)

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* Any single die "on" Both die "on" equally	P_{tot}	 2.25 2.75	 W W
Derate above 25°C* Any single die "on" Both die "on" equally		 18 22	 mW/ °C mW/ °C
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		 55.6 45.5	 °C/ W °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.

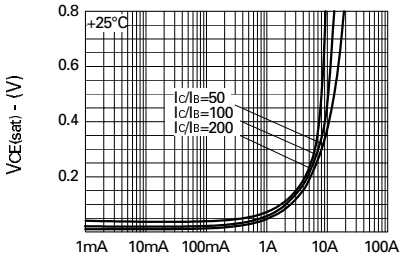
ZDT1048

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 Cutoff Current	I_{CBO}		0.3	10	nA	V_{CB}=35V
Emitter Cutoff Current	I_{EBO}		0.3	10	nA	V_{EB}=4V
Collector Emitter Cutoff Current	I_{CES}		0.3	10	nA	V_{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

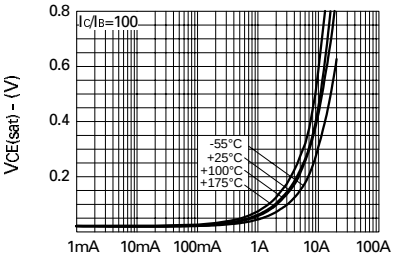
*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%

TYPICAL CHARACTERISTICS



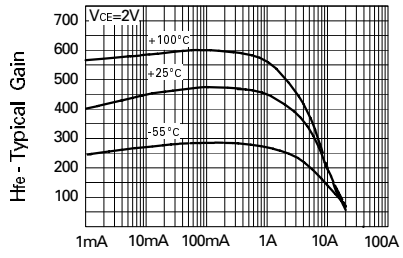
IC-Collector Current

VCE(sat) v IC



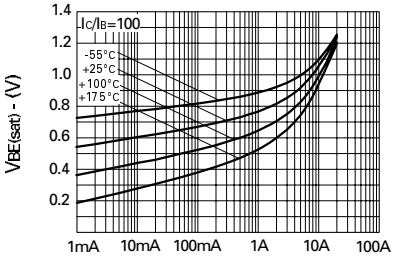
IC-Collector Current

VCE(sat) v IC



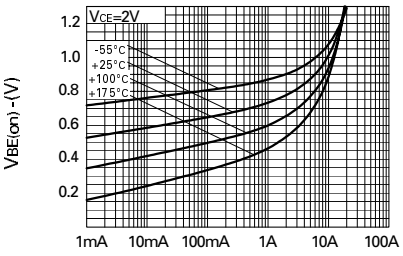
IC-Collector Current

hFE v IC



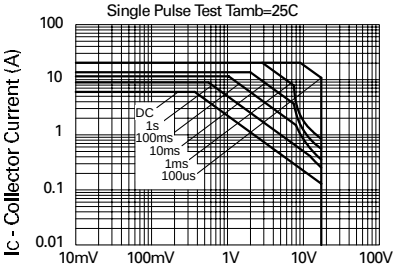
IC-Collector Current

VBE(sat) v IC



IC-Collector Current

VBE(on) v IC



VCE - Collector Voltage

Safe Operating Area