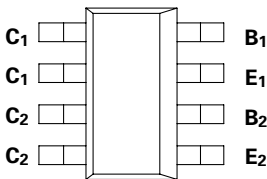


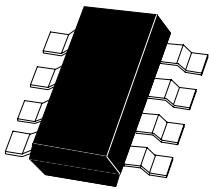
**SM-8 DUAL NPN MEDIUM POWER
HIGH GAIN TRANSISTORS**

ISSUE 1 - NOVEMBER 1995

ZDT690



PARTMARKING DETAIL – T690



**SM-8
(8 LEAD SOT223)**

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	45	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	6	A
Continuous Collector Current	I_C	2	A
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	°C

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	VALUE	UNIT
Total Power Dissipation at $T_{amb} = 25^{\circ}\text{C}^*$	P_{tot}	2.25	W
Any single die "on"		2.75	W
Both die "on" equally			
Derate above 25°C^*		18	mW/°C
Any single die "on"		22	mW/°C
Both die "on" equally			
Thermal Resistance - Junction to Ambient*		55.6	°C/ W
Any single die "on"		45.5	°C/ W
Both die "on" equally			

* 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.

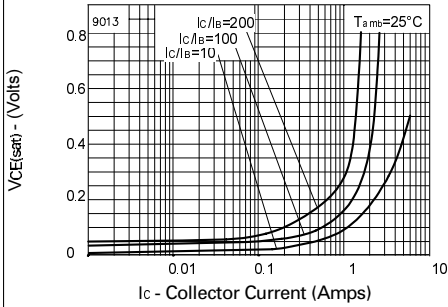
ZDT690

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$).

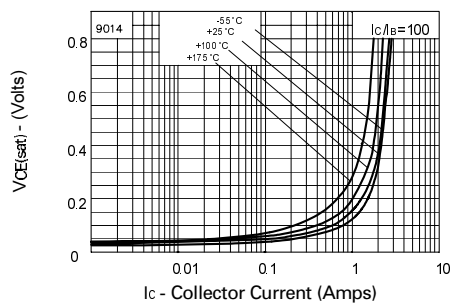
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	45			V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	45			V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu\text{A}$
Collector Cutoff Current	I_{CBO}			0.1	μA	$V_{CB}=35\text{V}$
Emitter Cutoff Current	I_{EBO}			0.1	μA	$V_{EB}=4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.1 0.5	V V	$I_C=0.1\text{A}$, $I_B=0.5\text{mA}^*$ $I_C=1\text{A}$, $I_B=5\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.9	V	$I_C=1\text{A}$, $I_B=10\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			0.9	V	$I_C=1\text{A}$, $V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	500 400 150				$I_C=100\text{mA}$, $V_{CE}=2\text{V}^*$ $I_C=1\text{A}$, $V_{CE}=2\text{V}^*$ $I_C=2\text{A}$, $V_{CE}=2\text{V}^*$
Transition Frequency	f_T	150			MHz	$I_C=50\text{mA}$, $V_{CE}=5\text{V}$ $f=50\text{MHz}$
Input Capacitance	C_{ibo}		200		pF	$V_{EB}=0.5\text{V}$, $f=1\text{MHz}$
Output Capacitance	C_{obo}		16		pF	$V_{CB}=10\text{V}$, $f=1\text{MHz}$
Switching Times	t_{on} t_{off}		33 1300		ns ns	$I_C=500\text{mA}$, $I_{B1}=50\text{mA}$ $I_{B2}=50\text{mA}$, $V_{CC}=10\text{V}$

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

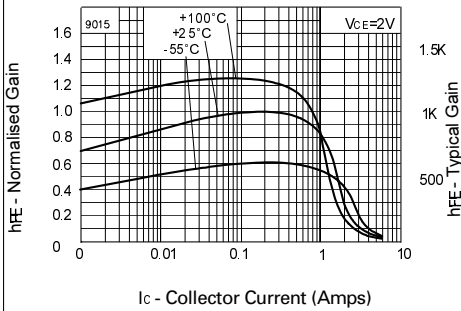
TYPICAL CHARACTERISTICS



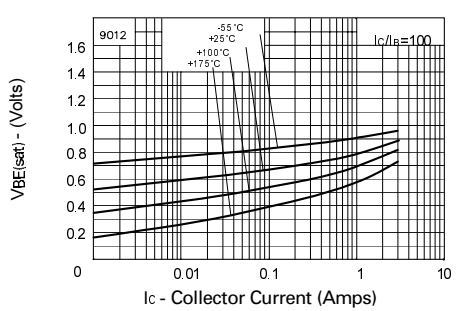
$V_{CE(sat)}$ v I_C



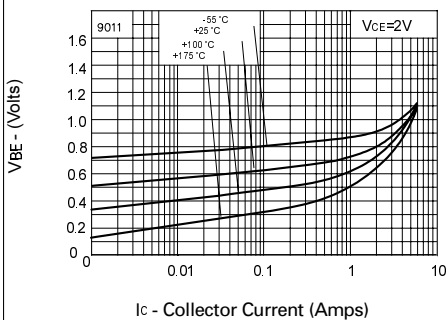
$V_{CE(sat)}$ v I_C



hFE v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C