

KSD1692 NPN SILICON DARLINGTON TRANSISTOR

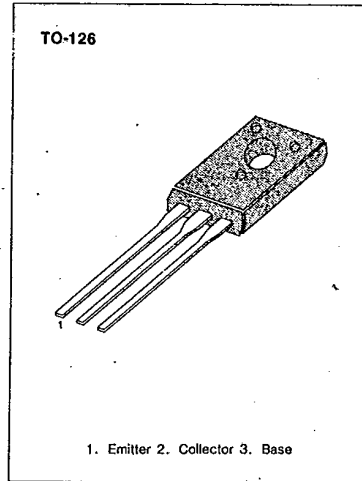
T-33-29

**HIGH DC CURRENT GAIN
LOW COLLECTOR SATURATION VOLTAGE
BUILT-IN A DAMPER DIODE AT E-C**

HIGH POWER DISSIPATION : $P_T = 1.3W$ ($T_a=25^\circ C$)

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ C$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	150	V
Collector-Emitter Voltage	V_{CE0}	100	V
Emitter-Base Voltage	V_{EB0}	8	V
Collector Current (DC)	I_C	3	A
*Collector Current (Pulse)	I_C	5	A
Collector Dissipation ($T_a=25^\circ C$)	P_C	1.3	W
Collector Dissipation ($T_c=25^\circ C$)	P_C	15	W
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-55~150	$^\circ C$



* $PW < 10$ mS duty cycle $\leq 50\%$

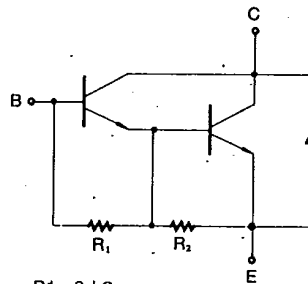
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ C$)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CB0}	$V_{CB}=100V, I_E=0$			10	μA
Emitter Cutoff Current	I_{EB0}	$V_{EB}=5V, I_C=0$			2	mA
*DC Current Gain	h_{FE1}	$V_{CE}=2V, I_C=1.5A$	2000		20000	
	h_{FE2}	$V_{CE}=2V, I_C=3A$	1000			
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1.5A, I_B=1.5mA$		0.9	1.2	V
*Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.5A, I_B=1.5mA$		1.5	2	V
Turn On Time	t_{on}	$I_C=1.5A, I_{B1}=-I_{B2}=1.5mA$		0.5		μS
Storage Time	t_{stg}	$R_L=27\Omega, V_{CC}=40V$		2		μS
Fall Time	t_f			1		μS

* Pulse test: $PW \leq 350\mu s$, duty cycle $\leq 2\%$ Pulsed

h_{FE} (1) CLASSIFICATION

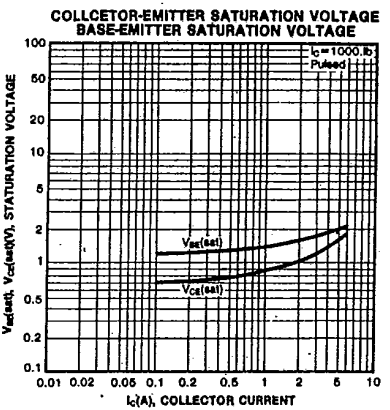
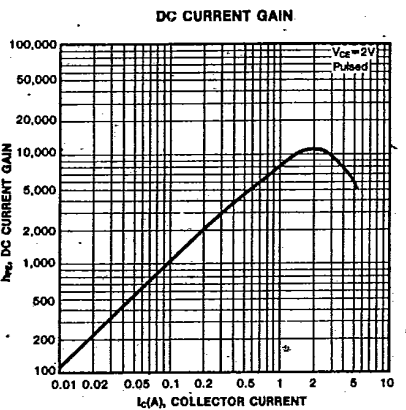
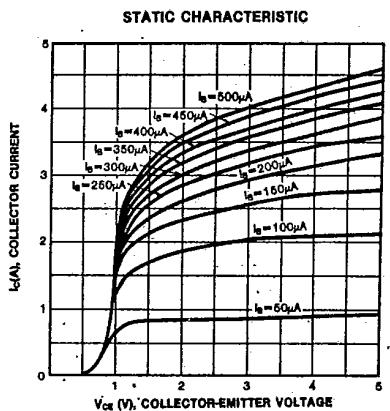
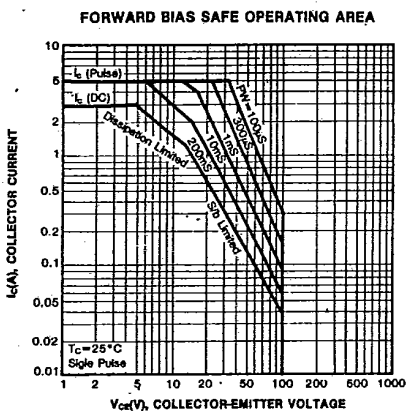
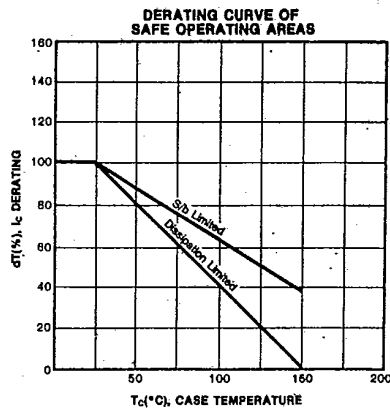
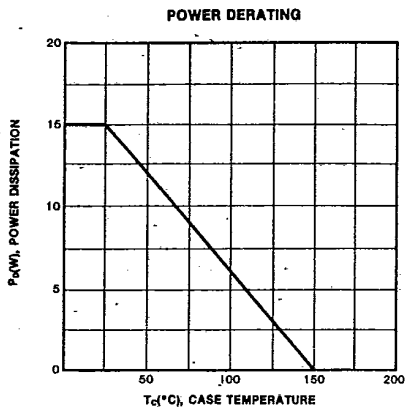
Classification	O	Y	G
$h_{FE} 1$	2000-5000	4000-12000	6000-20000



$R1 = 8 k\Omega$
 $R2 = 0.6 k\Omega$

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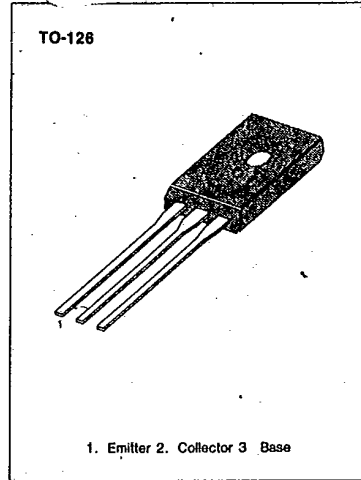
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NPN SILICON DARLINGTON TRANSISTOR

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**HIGH DC CURRENT GAIN
LOW COLLECTOR SATURATION VOLTAGE
BUILT-IN A ZENER DIODE AT B-C AND
A DAMPER DIODE AT E-C**

HIGH POWER DISSIPATION : $P_T = 1.3W$ ($T_a = 25^\circ C$)



ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ C$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	60 ± 10	V
Collector-Emitter Voltage	V_{CEO}	60 ± 10	V
Emitter-Base Voltage	V_{EBO}	8	V
Collector Current (DC)	I_C	3	A
* Collector Current (Pulse)	I_C	5	A
Collector Dissipation ($T_a = 25^\circ C$)	P_C	1.3	W
Collector Dissipation ($T_c = 25^\circ C$)	P_C	15	W
Junction Temperature	TJ	150	$^\circ C$
Storage Temperature	Tstg	$-55 \sim 150$	$^\circ C$

* $PW < 10mS$, duty cycle $< 50\%$

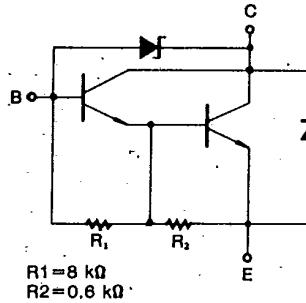
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Voltage	V_{CBO}	$I_C = 1mA, I_E = 0$	50	60	70	V
Collector-Emitter Voltage	V_{CEO}	$I_C = 10mA, R_{BE} = \infty$	50	60	70	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 40V, I_E = 0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			2	mA
* DC Current Gain	h_{FE1}	$V_{CE} = 2V, I_C = 1.5A$	2000		20000	
	h_{FE2}	$V_{CE} = 2V, I_C = 3A$	1000			
* Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1.5A, I_B = 1.5mA$		0.9	1.2	V
* Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1.5A, I_B = 1.5mA$		1.5	2	V
Turn On Time	t_{on}	$I_C = 1.5A, I_{B1} = -I_{B2} = 1.5mA$		0.5		μS
Storage Time	t_{stg}	$R_L = 27\Omega, V_{CC} = 40V$		2		μS
Fall Time	t_f			1		μS

* Pulse test: $PW < 350\mu s$, duty cycle $< 2\%$ Pulsed

h_{FE} (1) CLASSIFICATION

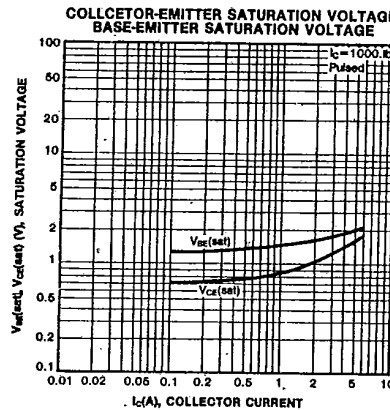
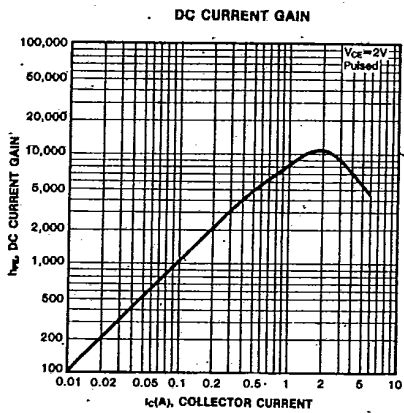
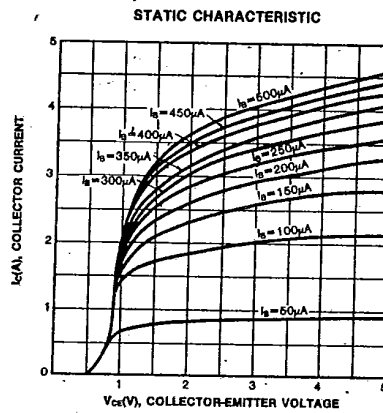
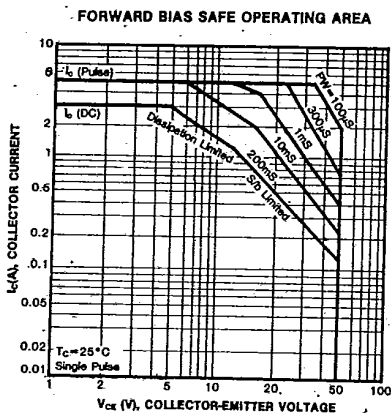
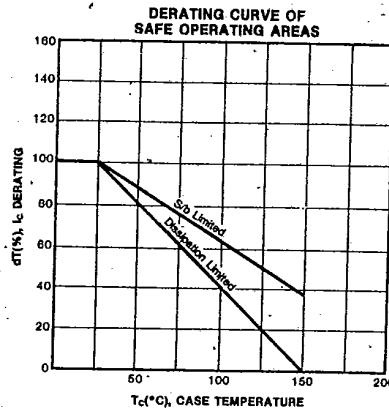
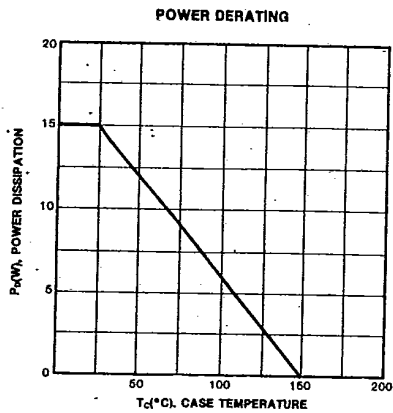
Classification	O	Y	G
h_{FE} 1	2000-5000	4000-12000	8000-20000



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**NPN TRIPLE DIFFUSED
PLANAR SILICON TRANSISTOR**

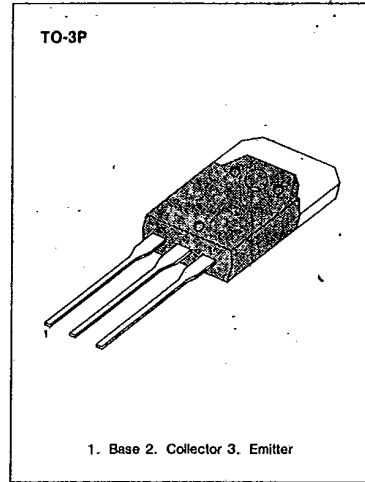
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**COLOR TV HORIZONTAL OUTPUT
APPLICATIONS (DAMPER DIODE BUILT IN)**

HIGH Collector-Base Voltage $V_{CBO} = 1500V$

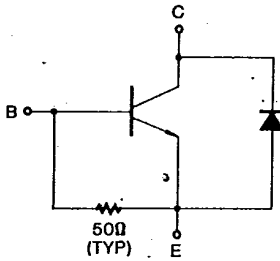
ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ C$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	1500	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current	I_C	2.5	A
Collector Current (Peak)	I_C	10	A
Collector Dissipation ($T_c = 25^\circ C$)	P_C	80	W
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-55~150	$^\circ C$



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	$V_{CB} = 800V, I_E = 0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 4V, I_C = 0$	40		130	mA
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_C = 0.5A$	8			
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 2A, I_B = 0.6A$			8	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 2A, I_B = 0.6A$			1.5	V
Current Gain Bandwidth Product	f_r	$V_{CE} = 10V, I_C = 0.5A$		3		MHz
Damper Diode Turn On Voltage	V_f	$I_f = 2.5A$			2	V
Fall Time	t_f	$I_C = 2A, I_B1 = 0.6A$ $I_B2 = -1.2A, V_{CC} = 200V$ $RL = 100\Omega$			0.4	μS

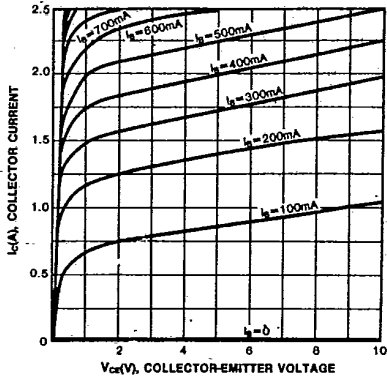


**NPN TRIPLE DIFFUSED
PLANAR SILICON TRANSISTOR**

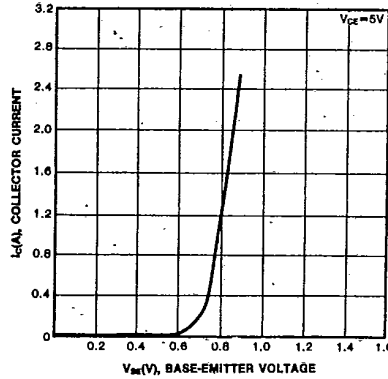
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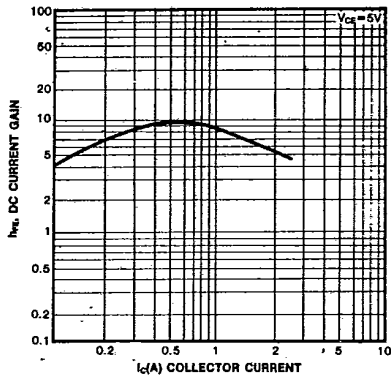
STATIC CHARACTERISTIC



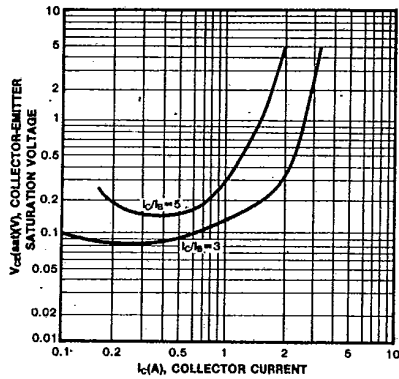
BASE-EMITTER ON VOLTAGE



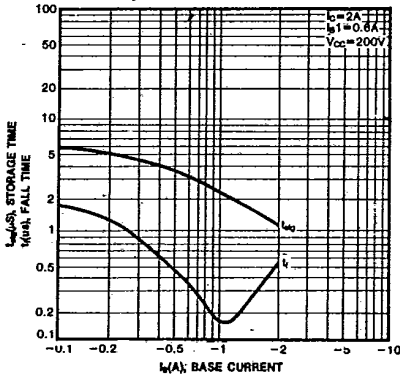
DC CURRENT GAIN



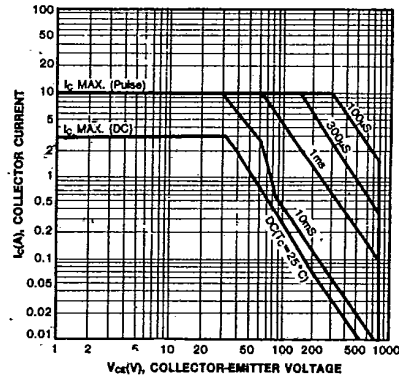
COLLECTOR-EMITTER SATURATION VOLTAGE



TURN ON TIME



SAFE OPERATING AREA



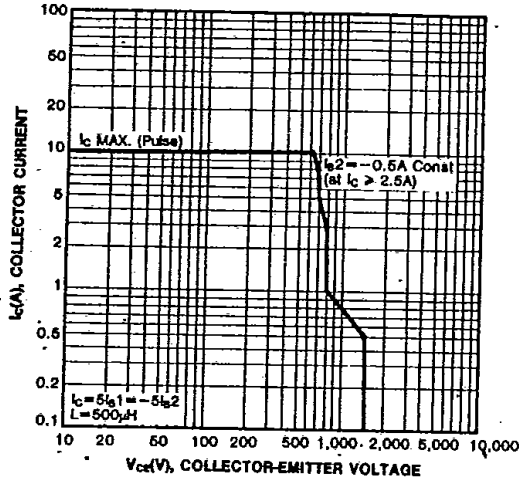
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NPN TRIPL E DIFFUSED
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REVERSE BIAS SAFE OPERATING AREA



POWER DERATING

