

KSD1692

NPN SILICON DARLINGTON TRANSISTOR

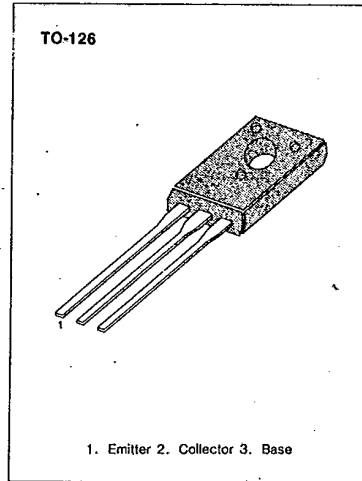
T-33-29

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 $\leq 50\%$

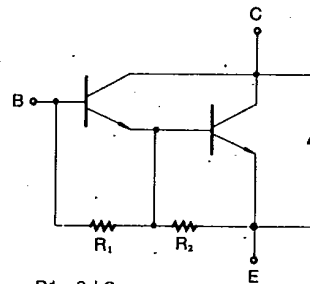
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ C$)

| 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: $PW < 350\mu s$, duty cycle $\leq 2\%$ Pulsed

h_{FE} (1) CLASSIFICATION

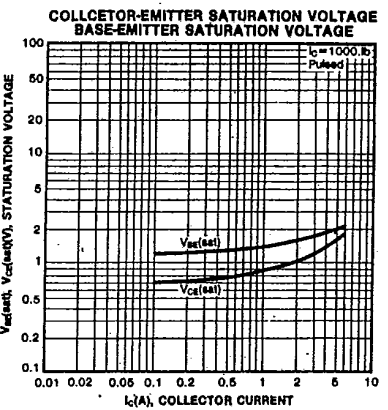
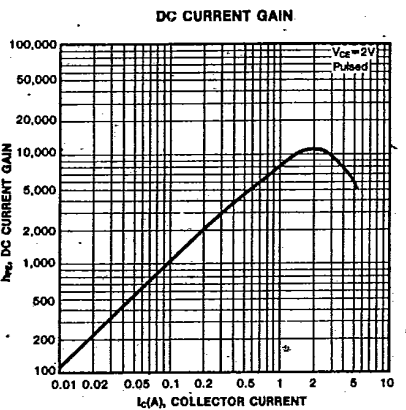
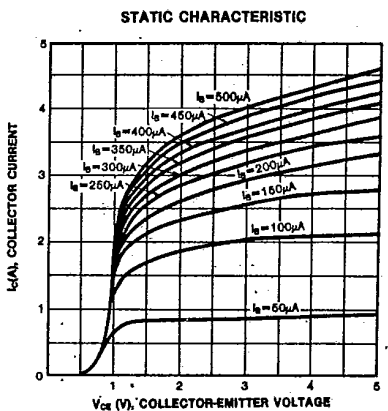
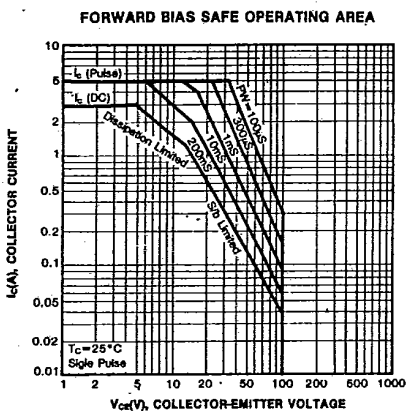
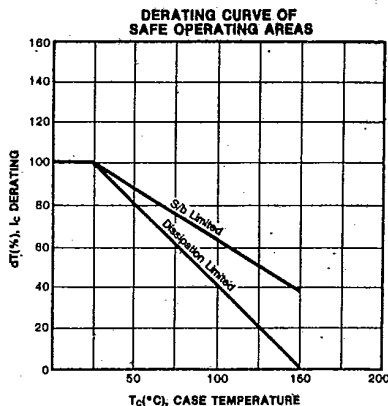
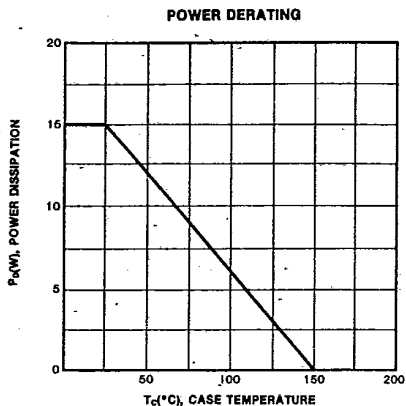
| Classification | O | Y | G |
|----------------|-----------|------------|------------|
| $h_{FE} 1$ | 2000-5000 | 4000-12000 | 6000-20000 |



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

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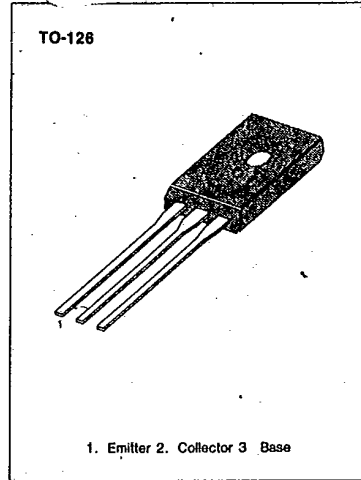
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NPN SILICON DARLINGTON TRANSISTOR

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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 $< 50\%$

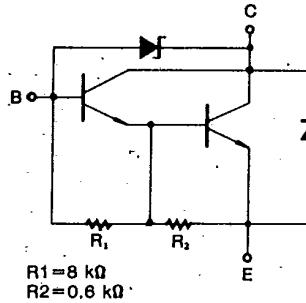
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

| 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} h_{FE2} | $V_{CE} = 2V, I_C = 1.5A$ $V_{CE} = 2V, I_C = 3A$ | 2000 1000 | | 20000 | |
| *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

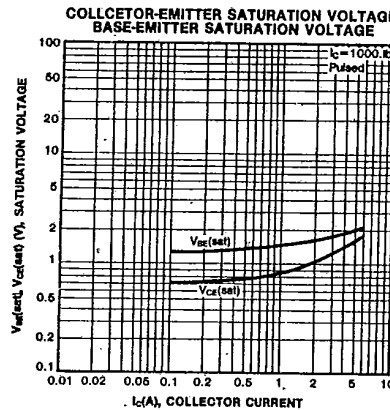
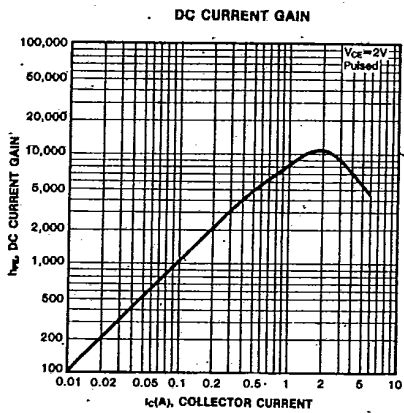
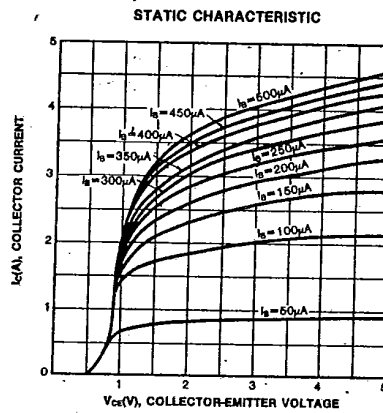
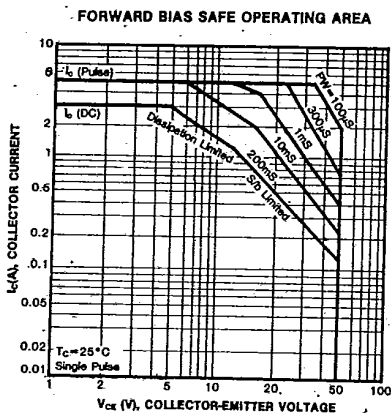
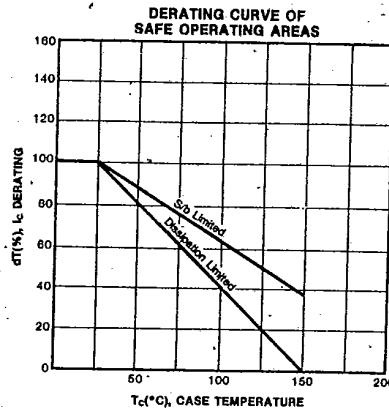
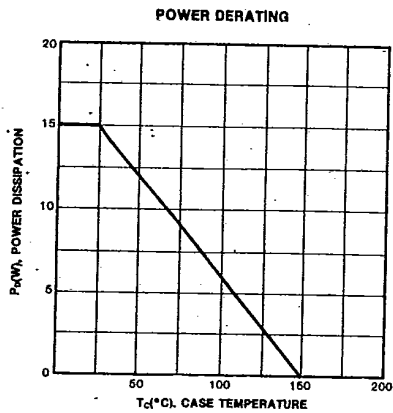
| Classification | O | Y | G |
|----------------|-----------|------------|------------|
| $h_{FE} 1$ | 2000-5000 | 4000-12000 | 8000-20000 |



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KSD5000

**NPN TRIPLE DIFFUSED
PLANAR SILICON TRANSISTOR**

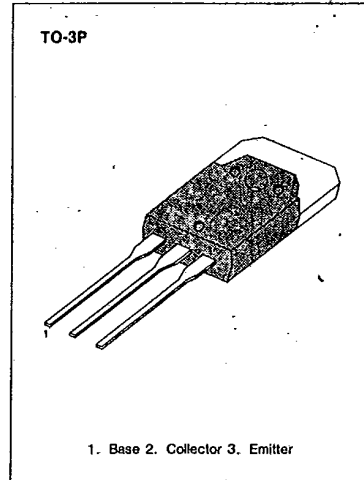
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**COLOR TV HORIZONTAL OUTPUT
APPLICATIONS (DAMPER DIODE BUILT IN)**

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

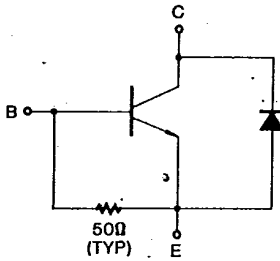
ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ C$)

| 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 |

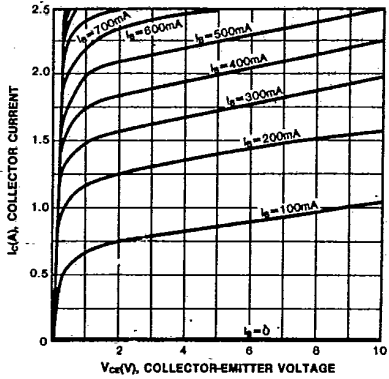


**NPN TRIPLE DIFFUSED
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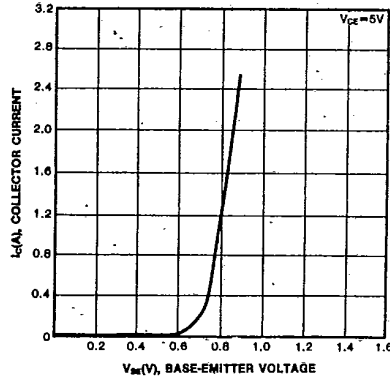
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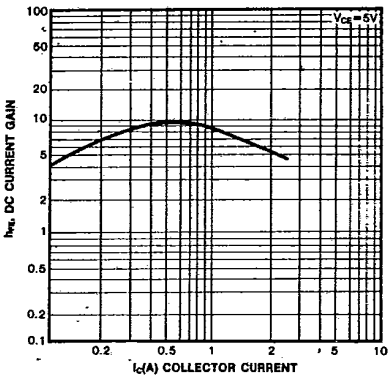
STATIC CHARACTERISTIC



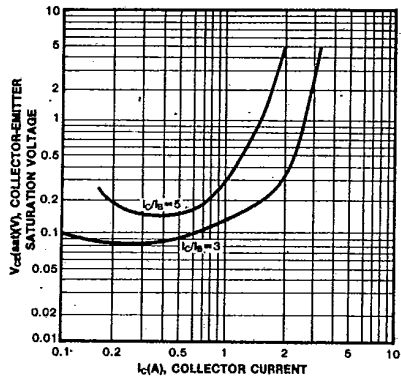
BASE-EMITTER ON VOLTAGE



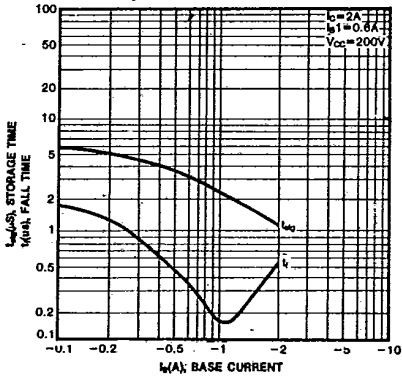
DC CURRENT GAIN



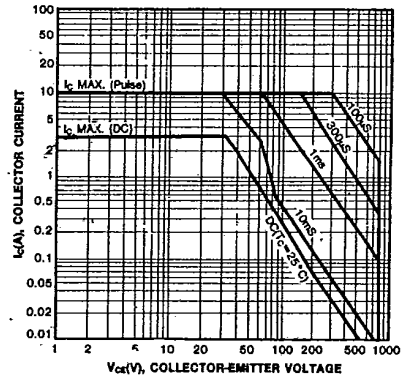
COLLECTOR-EMITTER SATURATION VOLTAGE



TURN ON TIME



SAFE OPERATING AREA



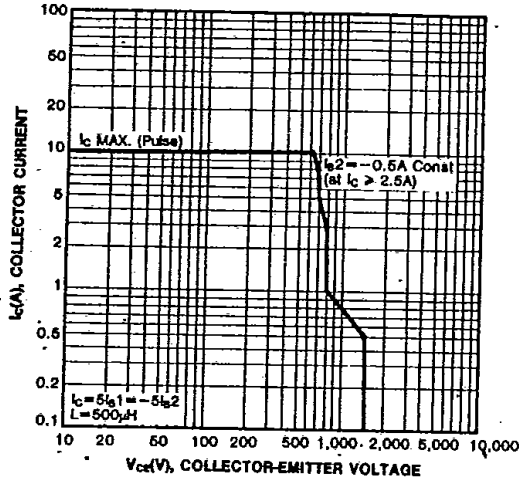
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REVERSE BIAS SAFE OPERATING AREA



POWER DERATING

