

MPSA10**NPN EPITAXIAL SILICON TRANSISTOR**

T-29-21

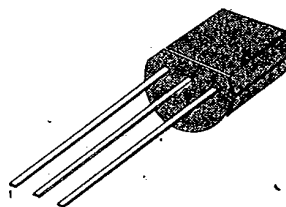
AMPLIFIER TRANSISTOR

- Collector-Emitter Voltage: $V_{CE0} = 40V$
- Collector Dissipation: $P_C (\text{max}) = 625mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CE0}	40	V
Emitter-Base Voltage	V_{EB0}	4	V
Collector Current	I_C	100	mA
Collector Dissipation	P_C	625	mW
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ 150	$^\circ C$

TO-92



1. Emitter 2. Base 3. Collector

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

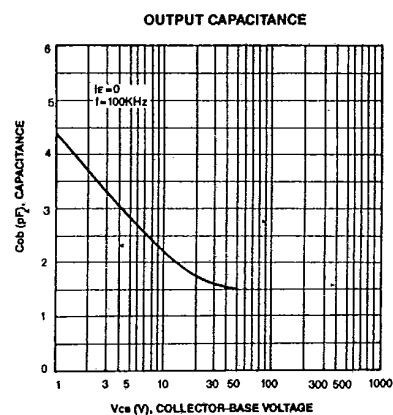
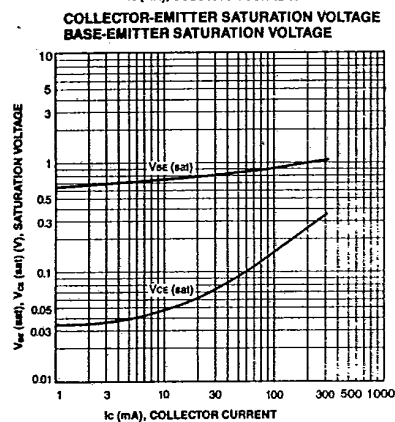
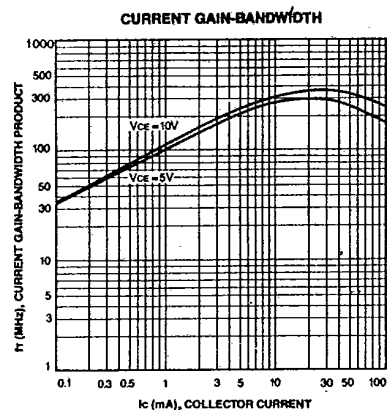
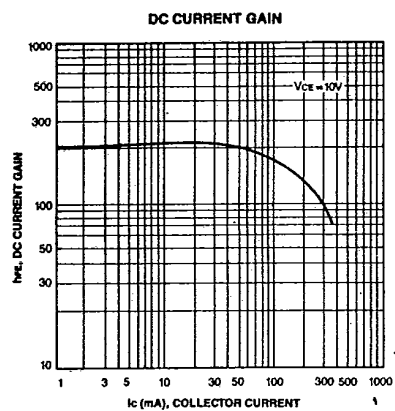
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CE0}	$I_C = 1mA, I_B = 0$	40			V
Emitter-Base Breakdown Voltage	BV_{EB0}	$I_E = 100\mu A, I_C = 0$	4			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 30V, I_E = 0$			100	nA
DC Current Gain	h_{FE}	$I_C = 5mA, V_{CE} = 10V$	40		400	
Current Gain Bandwidth Product	f_T	$I_C = 5mA, V_{CE} = 10V$ $f = 100MHz$	125			MHz
Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0$ $f = 100KHz$			4	pF



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**NPN EPITAXIAL
SILICON DARLINGTON TRANSISTOR**
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DARLINGTON TRANSISTOR

- Collector-Emitter Voltage: $V_{CES} = 20V$
- Collector Dissipation: $P_C (max) = 625mW$

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

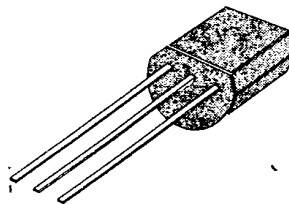
Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CES}	20	V
Emitter-Base Voltage	V_{EBO}	10	V
Collector Dissipation	P_C	625	mW
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ 150	$^\circ C$

- Refer to 2N6427 for graphs

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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C = 100\mu A, I_B = 0$	20			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 15V, I_E = 0$			100	nA
Collector Cut-off Current	I_{CES}	$V_{CE} = 15V, I_B = 0$			100	nA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 10V, I_C = 0$			100	nA
DC Current Gain	h_{FE}	$I_C = 10mA, V_{CE} = 5V$	20K			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 0.01mA$			1	V
Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 10mA, V_{CE} = 5V$			1.4	V

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1. Emitter 2. Base 3. Collector



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SILICON DARLINGTON TRANSISTOR**

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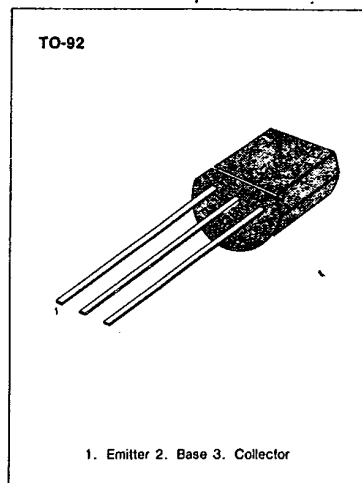
DARLINGTON TRANSISTOR

- Collector-Emitter Voltage: $V_{CES} = 30V$
- Collector Dissipation: $P_C (max) = 625mW$

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CES}	30	V
Emitter-Base Voltage	V_{EBO}	10	V
Collector Current	I_C	500	mA
Collector Dissipation	P_C	625	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{stg}	-55 ~ 150	°C

* Refer to 2N6427 for graphs

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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C = 100\mu A, I_B = 0$	30			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 30V, I_E = 0$			100	nA
Emitter Cut-off Current	I_{EBO}	$V_{BE} = 10V, I_C = 0$			100	nA
*DC Current Gain	h_{FE}	$I_C = 10mA, V_{CE} = 5V$ $I_C = 100mA, V_{CE} = 5V$	10K 20K			
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100mA, I_B = 0.1mA$			1.5	V
Current Gain Bandwidth Product	f_T	$I_C = 10mA, V_{CE} = 5V$ $f = 100MHz$	125			MHz
*Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 100mA, V_{CE} = 5V$			2	V

* Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$ 

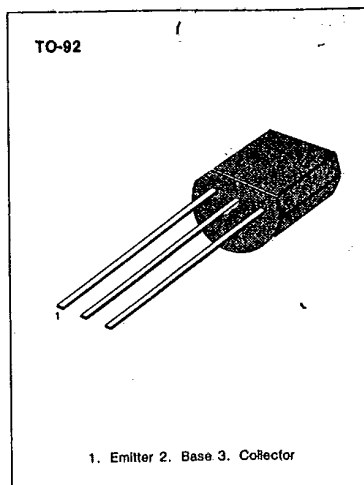
MPSA20**NPN EPITAXIAL SILICON TRANSISTOR****AMPLIFIER TRANSISTOR**

- Collector-Emitter Voltage: $V_{CE0} = 40V$
- Collector Dissipation: $P_C (\text{max}) = 625mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CE0}	40	V
Emitter-Base Voltage	V_{EB0}	4	V
Collector Current	I_C	100	mA
Collector Dissipation	P_C	625	mW
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ 150	$^\circ C$

- Refer to MPSA10 for graphs

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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
*Collector-Emitter Breakdown Voltage	BV_{CE0}	$I_C = 1mA, I_B = 0$	40			V
Emitter-Base Breakdown Voltage	BV_{EB0}	$I_E = 100\mu A, I_C = 0$	4			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 30V, I_E = 0$			100	nA
*DC Current Gain	h_{FE}	$I_C = 5mA, V_{CE} = 10V$	40		400	
*Current Gain Bandwidth Product	f_T	$I_C = 5mA, V_{CE} = 10V$ $f = 100MHz$	125			MHz
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 1mA$			0.25	V
Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0$ $f = 100KHz$			4	pF

- * Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$



MPSA25

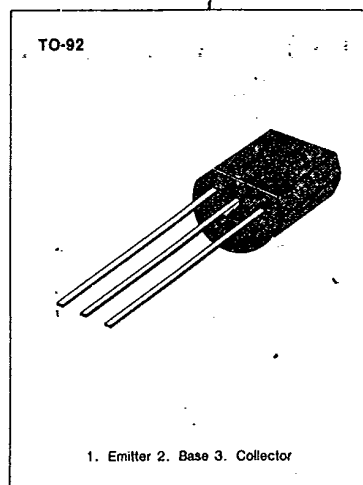
SILICON DARLINGTON TRANSISTOR

DARLINGTON TRANSISTOR

- Collector-Emitter Voltage: $V_{CE} = 40V$
- Collector Dissipation: $P_C(\text{max}) = 625mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CES}	40	V
Emitter-Base Voltage	V_{EBO}	10	V
Collector Current	I_C	500	mA
Collector Dissipation	P_C	625	mW
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 Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C = 100\mu A, V_{BE} = 0$	40			V
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = 100\mu A, I_E = 0$	40			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 30V, I_E = 0$			100	nA
Emitter Cut-off Current	I_{EBO}	$V_{BE} = 10V, I_C = 0$			100	nA
Collector Cut-off Current	I_{CES}	$V_{CE} = 30V, V_{BE} = 0$			500	nA
*DC Current Gain	h_{FE}	$I_C = 10mA, V_{CE} = 5V$	10K			
		$I_C = 100mA, V_{CE} = 5V$	10K			
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100mA, I_B = 0.1mA$			1.5	V
*Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 100mA, V_{CE} = 5V$			2	V

*Pulse Test: Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

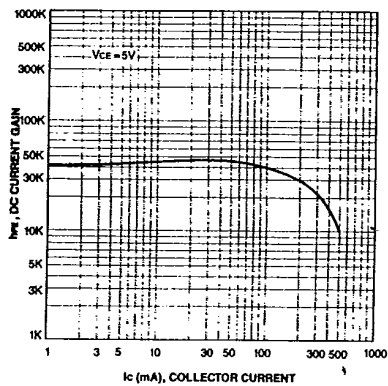


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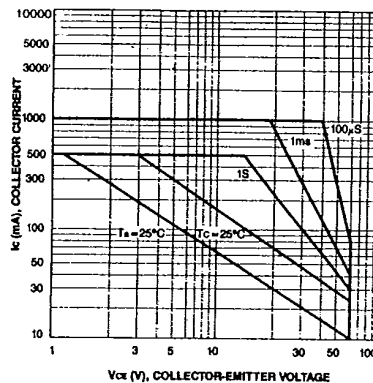
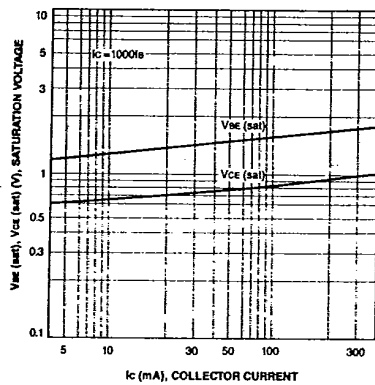
NPN EPITAXIAL
SILICON DARLINGTON TRANSISTOR

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DC CURRENT GAIN



SAFE OPERATING AREA

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE

BASE-EMITTER ON VOLTAGE

