

MPSA64**PNP EPITAXIAL
SILICON DARLINGTON TRANSISTOR**

T-29-29

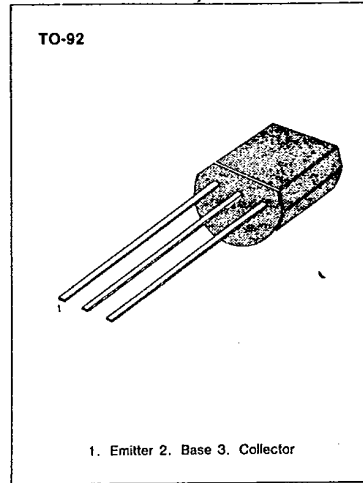
DARLINGTON TRANSISTOR

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

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

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CES}	30	V
Collector-Base Voltage	V_{CBO}	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	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ 150	$^\circ C$

* Refer to MPSA62 for graphs

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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C = 100\mu A, V_{BE} = 0$	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	$V_{CE} (\text{sat})$	$I_C = 100mA, I_B = 0.1mA$			1.5	V
*Base-Emitter On Voltage	$V_{BE} (\text{on})$	$I_C = 100mA, V_{CE} = 5V$			2	V
Current Gain Bandwidth Product	f_T	$I_C = 100mA, V_{CE} = 5V$ $f = 100MHz$	125			MHz

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

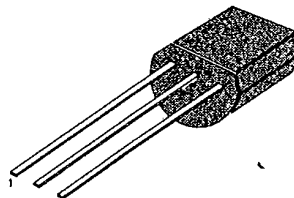
MPSA70**PNP EPITAXIAL SILICON TRANSISTOR****AMPLIFIER TRANSISTOR**

- 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	$^\circ C$

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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	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 1mA$			0.25	V
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

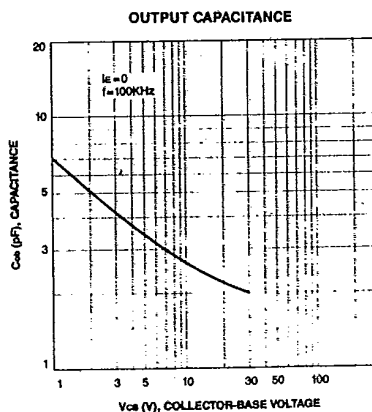
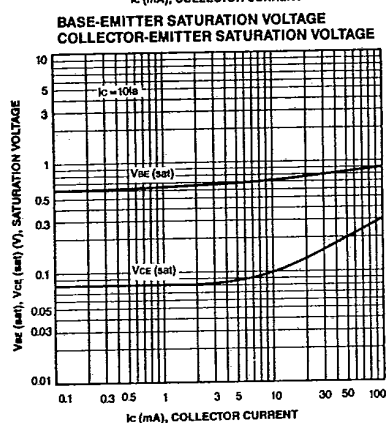
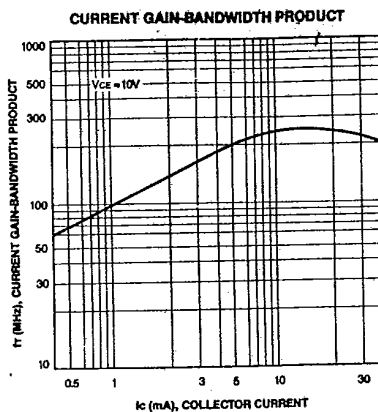
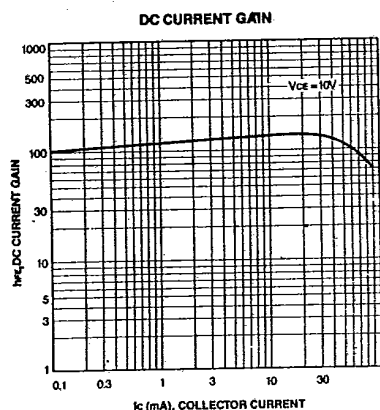
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MPSA70

PNP EPITAXIAL SILICON TRANSISTOR

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MPSA75**PNP EPITAXIAL
SILICON DARLINGTON TRANSISTOR**

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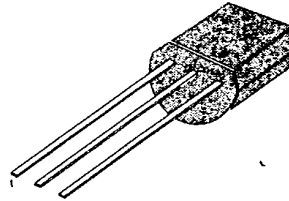
DARLINGTON TRANSISTOR

- Collector-Emitter Voltage: $V_{CES}=40V$
- 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	$^\circ C$

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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_{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}	$I_C=10mA, V_{CE}=5V$ $I_C=100mA, V_{CE}=5V$	10K 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

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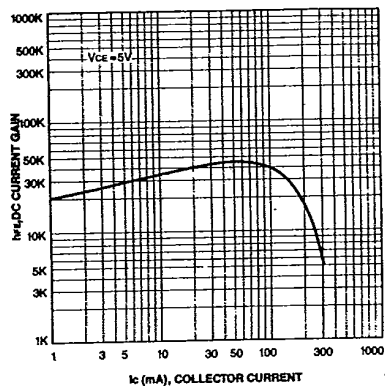
MPSA75

SAMSUNG SEMICONDUCTOR INC

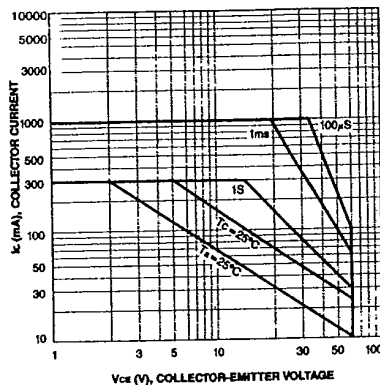
PNP EPITAXIAL SILICON DARLINGTON TRANSISTOR

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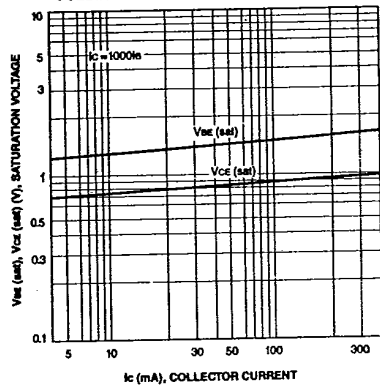
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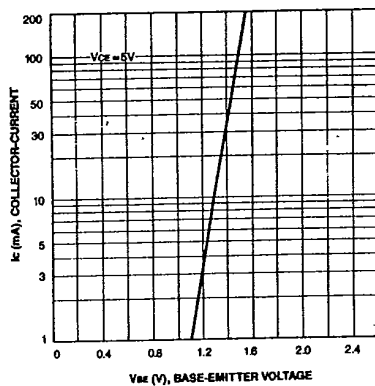
SAFE OPERATING AREA



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



BASE-EMITTER ON VOLTAGE



SAMSUNG SEMICONDUCTOR

MPSA76**PNP EPITAXIAL
SILICON DARLINGTON TRANSISTOR**

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DARLINGTON TRANSISTOR

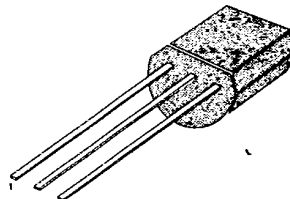
- Collector-Emitter Voltage: $V_{CES} = 50V$
- Collector Dissipation: $P_C (max) = 625mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CES}	50	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	$^\circ C$

- Refer to MPSA75 for graphs

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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_{CES}	$I_C = 100\mu A, V_{BE} = 0$	50			V
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = 100\mu A, I_E = 0$	50			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 40V, I_E = 0$			100	nA
Emitter Cut-off Current	I_{EBO}	$V_{BE} = 10V, I_C = 0$			100	nA
Collector Cut-off Current	I_{CES}	$V_{CE} = 40V, V_{BE} = 0$			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



MPSA77**PNP EPITAXIAL
SILICON DARLINGTON TRANSISTOR**

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DARLINGTON TRANSISTOR

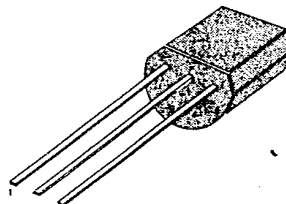
- Collector-Emitter Voltage: $V_{CES} = 60V$
- Collector Dissipation: $P_C (max) = 625mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CES}	60	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	$^\circ C$

- Refer to MPSA75 for graphs

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1. Emitter 2. Base 3. Collector

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

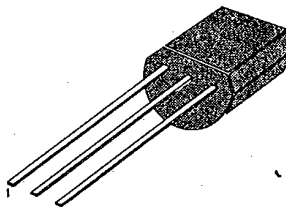
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C = 100\mu A, V_{BE} = 0$	60			V
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = 100\mu A, I_E = 0$	60			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 50V, I_E = 0$			100	nA
Emitter Cut-off Current	I_{EBO}	$V_{BE} = 10V, I_C = 0$			100	nA
Collector Cut-off Current	I_{CES}	$V_{CE} = 50V, V_{BE} = 0$			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



MPSH17**NPN EPITAXIAL SILICON TRANSISTOR****CATV TRANSISTOR****ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	20	V
Collector-Emitter Voltage	V_{CE0}	15	V
Emitter-Base Voltage	V_{EB0}	3.0	V
Collector Dissipation ($T_a=25^\circ\text{C}$)	P_C	625	mW
Derate above 25°C		5.0	mW/ $^\circ\text{C}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	200	$^\circ\text{C/W}$

TO-92



1. Base 2. Emitter 3. Collector

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

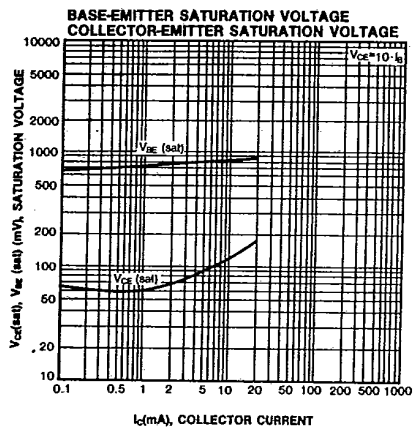
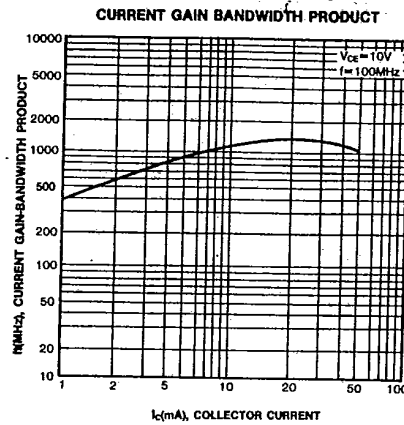
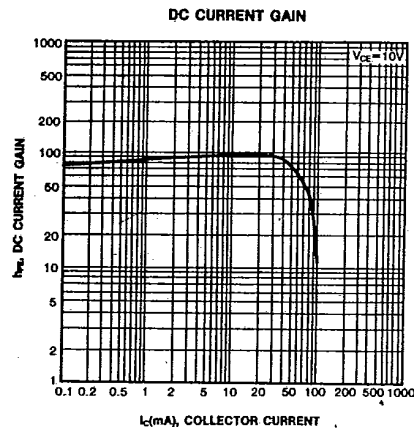
Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CB0}	$I_C=100\mu\text{A}, I_E=0$	20			V
Collector-Emitter Breakdown Voltage	BV_{CE0}	$I_C=1\text{mA}, I_B=0$	15			V
Emitter-Base Breakdown Voltage	BV_{EB0}	$I_E=10\mu\text{A}, I_C=0$	3.0			V
Collector Cutoff Current	I_{CB0}	$V_{CB}=15\text{V}, I_E=0$			100	nA
DC Current Gain	h_{FE}	$V_{CE}=10\text{V}, I_C=5\text{mA}$	25		250	
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$			0.5	V
Current Gain Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=5\text{mA}$ $f=100\text{MHz}$	800			MHz
Collector-Base Capacitance	C_{cb}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$	0.3		0.9	pF
Small Signal Current Gain	h_{fe}	$V_{CE}=10\text{V}, I_C=5\text{mA}$ $f=1\text{KHz}$	30			
Noise Figure	NF	$V_{CC}=12\text{V}, I_C=5\text{mA}$ $R_S=50\Omega, f=200\text{MHz}$			6.0	dB
Amplifier Power Gain	G _{pe}	$V_{CC}=12\text{V}, I_C=5\text{mA}$ $R_S=50\Omega, f=200\text{MHz}$		24		dB



MPSH17

NPN EPITAXIAL SILICON TRANSISTOR

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