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HIGH VOLTAGE SILICON DIFFUSED PNP TRANSISTORS

TYPES 2N5091A, 2N5093A, 2N5094A 2N5096A

X00254

FEATURES

... designed for use in low power, line-operated series pass and switch regulators.

- HIGH COLLECTOR-EMITTER SUSTAINING VOLTAGE

$$V_{CEO(sus)} = 450 \text{ Vdc} @ I_C = 50 \text{ mAdc}$$

- EXCELLENT DC CURRENT GAIN

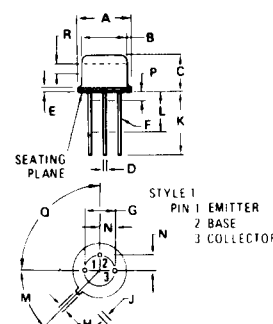
$$h_{FE} = 20-200 @ I_C 100 \text{ ma}$$

MAXIMUM RATINGS

Rating	Symbol	91A	93A	94A	96A	Unit
Collector-Emitter Voltage	V_{CEO}	300	350	400	450	Vdc
Collector-Base Voltage	V_{CB}	350	400	450	500	Vdc
Emitter-Base Voltage	V_{EB}	6				Vdc
Collector Current – Continuous	I_C	1				Adc
Base Current	I_B	.5				Adc
Total Device Dissipation @ $T_C = 100^\circ\text{C}$ Derate above 100°C	P_D	2 26.7				Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200				$^\circ\text{C}$

PHYSICAL DIMENSIONS

In accordance with JEDEC (T05) outline



DIM	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.125
F	0.406	0.483	0.016	0.019
G	4.83	5.33	0.190	0.210
H	0.711	0.864	0.028	0.034
J	0.737	1.02	0.029	0.040
K	12.70		0.500	
L	6.35		0.250	
M	45° NOM		45° NOM	
P		1.27		0.050
Q	90° NOM		90° NOM	
R	2.54		0.100	

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	θ_{JC}	87.5	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS

Characteristic	Fig. No.	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage* ($I_C = 50 \text{ mAdc}, I_B = 0$)	2N5091A 2N5093A 2N5094A 2N5096A	$BV_{CEO(sus)}^*$	300 350 400 450		Vdc
Collector-Emitter Voltage $R = 1K \Omega$	2N5091A 2N5093A 2N5094A 2N5096A	BV_{CER}	350 400 450 500		Vdc
Collector Current $I_E = 0, I_C = 0.1 \text{ ma}$	2N5091A 2N5093A 2N5094A 2N5096A	I_{CBO}	350 400 450 500		Vdc
Emitter Base Breakdown Voltage $I_C = 0, I_E = 20 \text{ ua}$	ALL	BV_{EBO}	6		
Emitter Cutoff Current ($V_{BE} = 4, \text{ Vdc}, I_C = 0$)	ALL	I_{EBO}		250	nAdc

ELECTRICAL CHARACTERISTICS

Characteristic	Fig. No.	Symbol	Min	Max	Unit
ON CHARACTERISTICS					
DC Current Gain* ($I_C = 100\text{mA}$, $V_{CE} = 15\text{V}$)	ALL	h_{FE}^*	20	200	
($I_C = 25\text{mA}$, $V_{CE} = 10\text{V}$)			40	250	
($I_C = 1\text{mA}$, $V_{CE} = 10\text{V}$)			20	200	
Collector-Emitter Saturation Voltage* ($I_C = 25\text{mA}$, $I_B = 2.5\text{mA}$)	ALL	$V_{CE(Sat)}^*$		3	Vdc
Base-Emitter Saturation Voltage* ($I_C = 25\text{mA}$, $V_{CE} = 10\text{V}$)	ALL	$V_{BE(Sat)}^*$		1	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C = 10\text{mA}$, $V_{CE} = 20\text{V}$, $f = 5\text{MHz}$)	ALL	f_T	4		MHz
Output Capacitance ($V_{CB} = 15\text{V}$, $I_E = 0$, $f = 2\text{MHz}$)	ALL	C_{ob}		20	pF

SWITCHING CHARACTERISTICS

Delay Time	(V _{CC} = 150Vdc, V _{EB(off)} = 0Vdc, I _C = 100mA, I _{B1} = 10mA)	ALL	t_d		700	ns
Rise Time					1500	ns
Storage Time	(V _{CC} = 150Vdc, I _C = 100mA, I _{B1} = I _{B2} = 10mA)	ALL	t_s		3	μs
Fall Time					200	ns

*Pulse Test: Pulse Width 300 μs, Duty Cycle = 2%

TYPICAL OPERATING CURVES

