

Silicon diffused power transistor

BU2520A

GENERAL DESCRIPTION

New generation, high-voltage, high-speed switching npn transistor in a plastic envelope intended for use in horizontal deflection circuits of large screen colour television receivers up to 32 kHz.

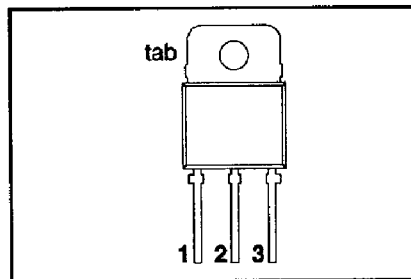
QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_{CESM}	Collector-emitter voltage peak value	$V_{BE} = 0$ V	-	1500	V
V_{CEO}	Collector-emitter voltage (open base)		-	800	V
I_C	Collector current (DC)		-	10	A
I_{CM}	Collector current peak value		-	25	A
P_{tot}	Total power dissipation	$T_{mb} \leq 25$ °C	-	125	W
V_{CEsat}	Collector-emitter saturation voltage	$I_C = 6.0$ A; $I_B = 1.2$ A	-	5.0	V
I_{Csat}	Collector saturation current		6	-	A
t_f	Fall time	$I_{CM} = 6.0$ A; $I_{B(on)} = 0.85$ A	0.2	-	µs

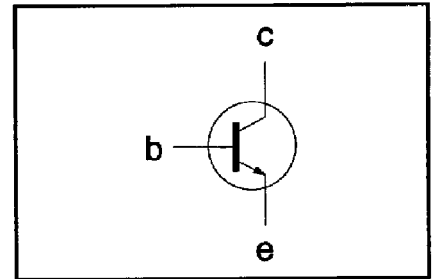
PINNING - SOT93

PIN	DESCRIPTION
1	base
2	collector
3	emitter
tab	collector

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum Rating System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CESM}	Collector-emitter voltage peak value	$V_{BE} = 0$ V	-	1500	V
V_{CEO}	Collector-emitter voltage (open base)		-	800	V
I_C	Collector current (DC)		-	10	A
I_{CM}	Collector current peak value		-	25	A
I_B	Base current (DC)		-	6	A
I_{BM}	Base current peak value		-	9	A
$-I_{B(AV)}$	Reverse base current	average over any 20 ms period	-	150	mA
$-I_{BM}$	Reverse base current peak value ¹		-	6	A
P_{tot}	Total power dissipation	$T_{mb} \leq 25$ °C	-	125	W
T_{stg}	Storage temperature		-65	150	°C
T_J	Junction temperature		-	150	°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$R_{th(j-mb)}$	Junction to mounting base	-	-	1.0	K/W
$R_{th(j-a)}$	Junction to ambient	in free air	45	-	K/W

¹ Turn-off current.

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STATIC CHARACTERISTICS

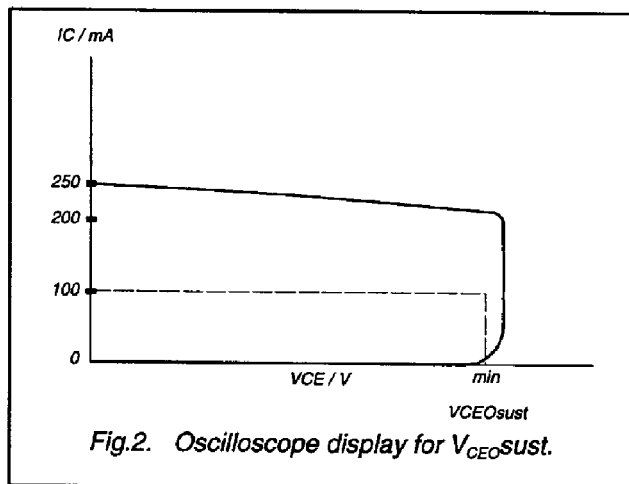
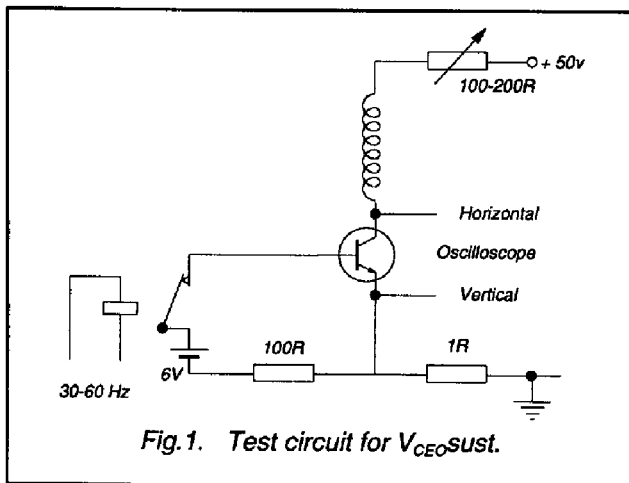
$T_{mb} = 25\text{ }^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CES}	Collector cut-off current ²	$V_{BE} = 0\text{ V}; V_{CE} = V_{CESMmax}$	-	-	1.0	mA
I_{CES}		$V_{BE} = 0\text{ V}; V_{CE} = V_{CESMmax}$	-	-	2.0	mA
I_{EBO}	Emitter cut-off current	$T_j = 125\text{ }^\circ\text{C}$ $V_{EB} = 7.5\text{ V}; I_C = 0\text{ A}$	-	-	1.0	mA
$V_{CEOsust}$	Collector-emitter sustaining voltage	$I_B = 0\text{ A}; I_C = 100\text{ mA};$ $L = 25\text{ mH}$	800	-	-	V
V_{CEsat}	Collector-emitter saturation voltage	$I_C = 6.0\text{ A}; I_B = 1.2\text{ A}$	-	-	5.0	V
V_{BEsat}	Base-emitter saturation voltage	$I_C = 6.0\text{ A}; I_B = 1.2\text{ A}$	-	-	1.3	V
h_{FE}	DC current gain	$I_C = 100\text{ mA}; V_{CE} = 5\text{ V}$	6	13	26	
h_{FE}		$I_C = 6\text{ A}; V_{CE} = 5\text{ V}$	5	7	10	

DYNAMIC CHARACTERISTICS

$T_{mb} = 25\text{ }^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
C_c	Collector capacitance	$I_E = 0\text{ A}; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	115	-	pF
	Switching times (32 kHz line deflection circuit)	$I_{CM} = 6.0\text{ A}; L_C = 330\text{ }\mu\text{H}; C_{fb} = 9\text{ nF};$ $I_{B(end)} = 0.85\text{ A}; L_B = 3.45\text{ }\mu\text{H};$ $-V_{BB} = 4\text{ V}; (-di_B/dt = 1.2\text{ A}/\mu\text{s})$			
t_s	Turn-off storage time		3.0	4.0	μs
t_f	Turn-off fall time		0.2	0.35	μs
	Switching times (16 kHz line deflection circuit)	$I_{CM} = 6.0\text{ A}; L_C = 650\text{ }\mu\text{H}; C_{fb} = 19\text{ nF};$ $I_{B(end)} = 1.0\text{ A}; L_B = 5.3\text{ }\mu\text{H}; -V_{BB} = 4\text{ V};$ $(-di_B/dt = 0.8\text{ A}/\mu\text{s})$			
t_s	Turn-off storage time		4.5	5.5	μs
t_f	Turn-off fall time		0.35	0.5	μs



² Measured with half sine-wave voltage (curve tracer).

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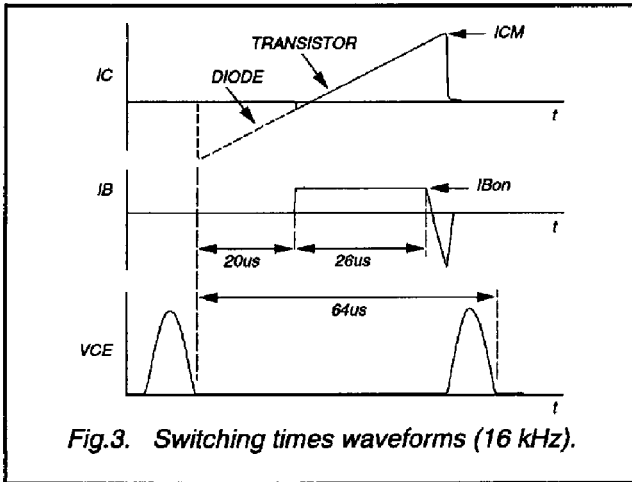


Fig.3. Switching times waveforms (16 kHz).

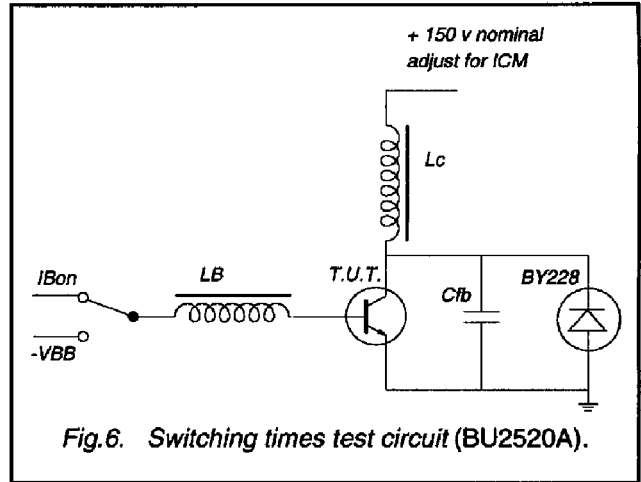


Fig.6. Switching times test circuit (BU2520A).

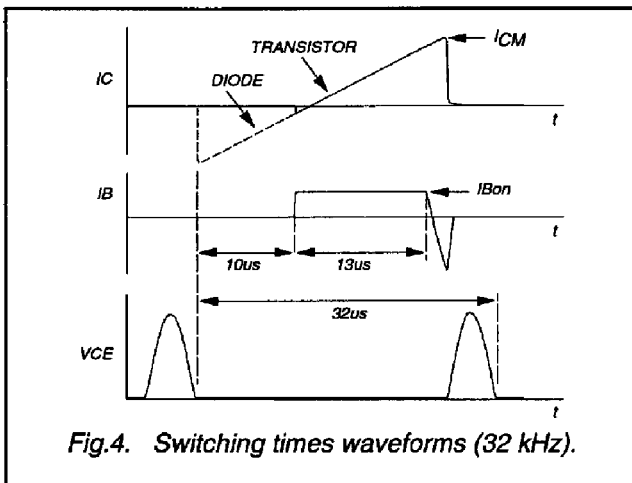


Fig.4. Switching times waveforms (32 kHz).

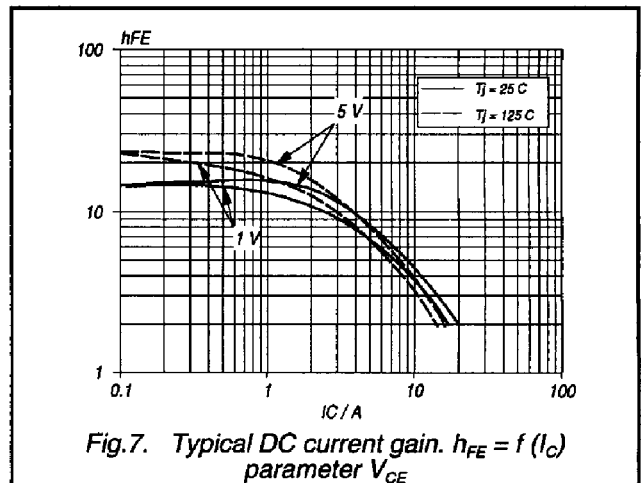


Fig.7. Typical DC current gain. $h_{FE} = f(I_C)$ parameter V_{CE}

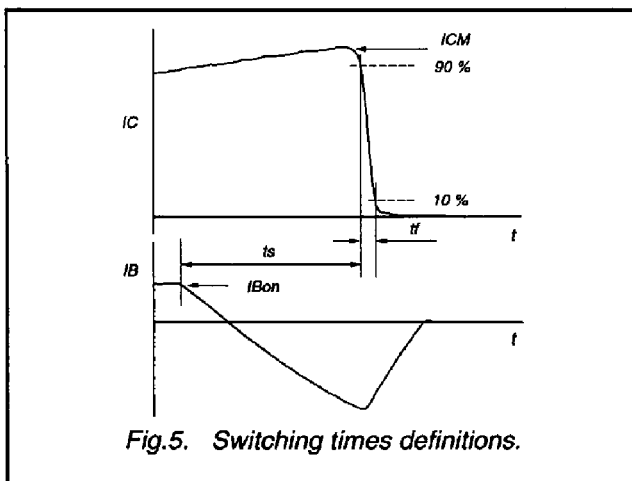


Fig.5. Switching times definitions.

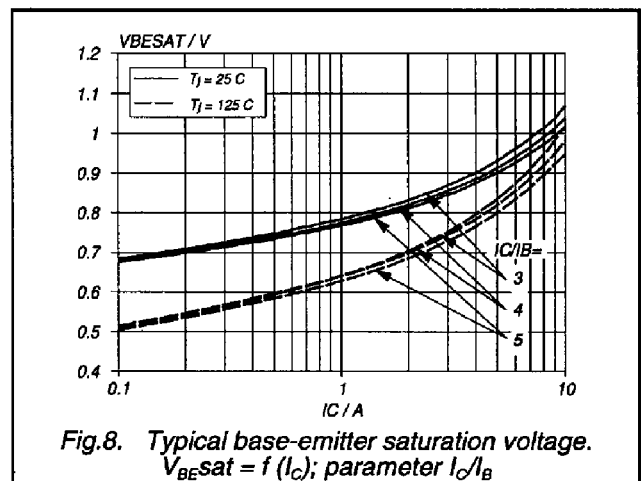
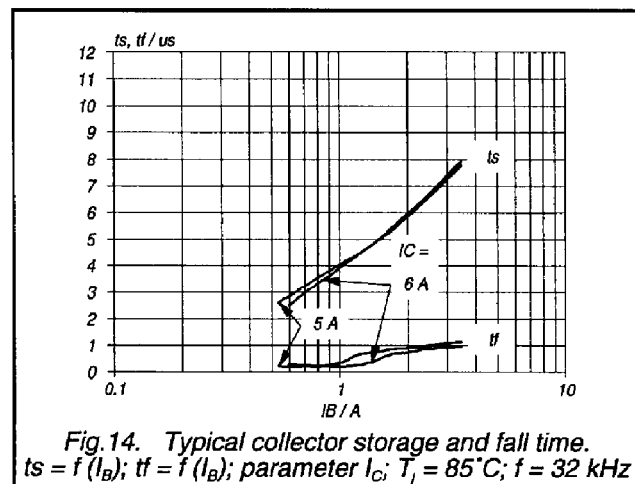
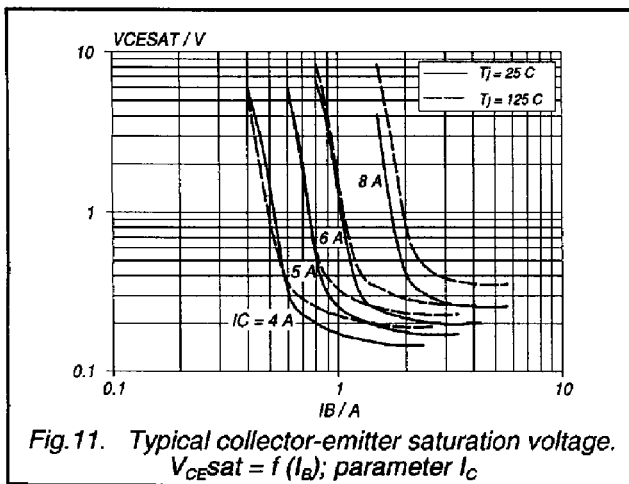
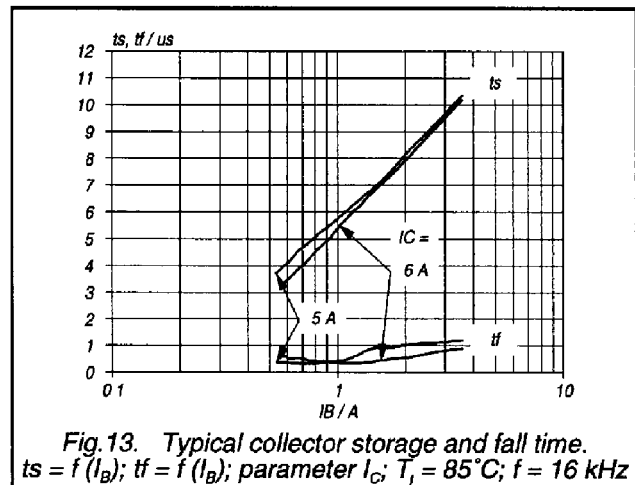
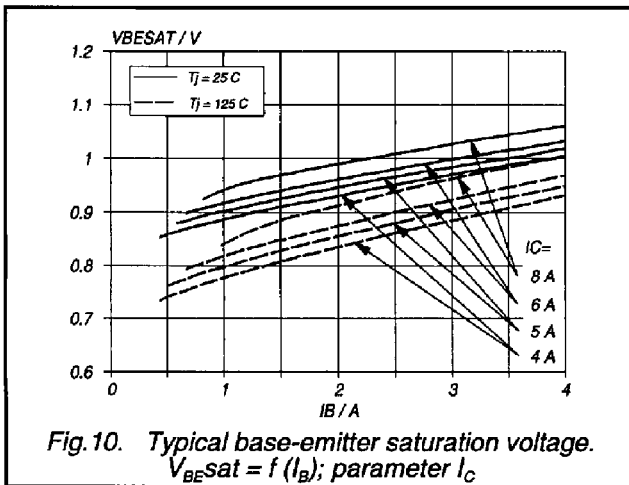
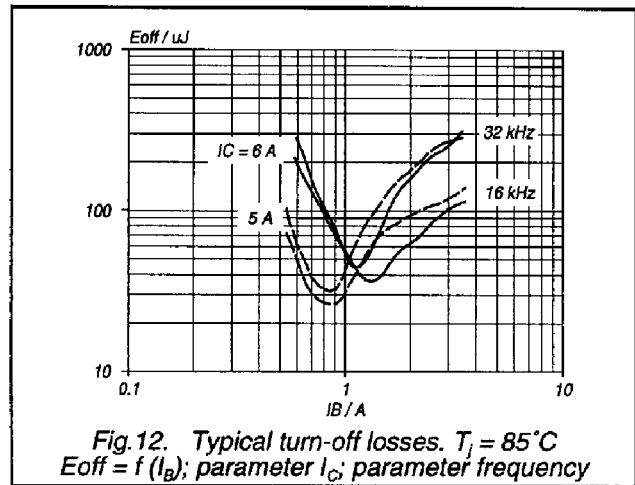
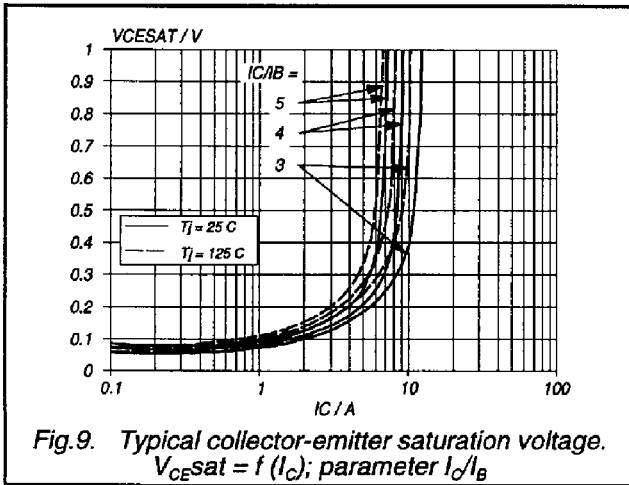


Fig.8. Typical base-emitter saturation voltage. $V_{BEsat} = f(I_C)$; parameter I_C/I_B

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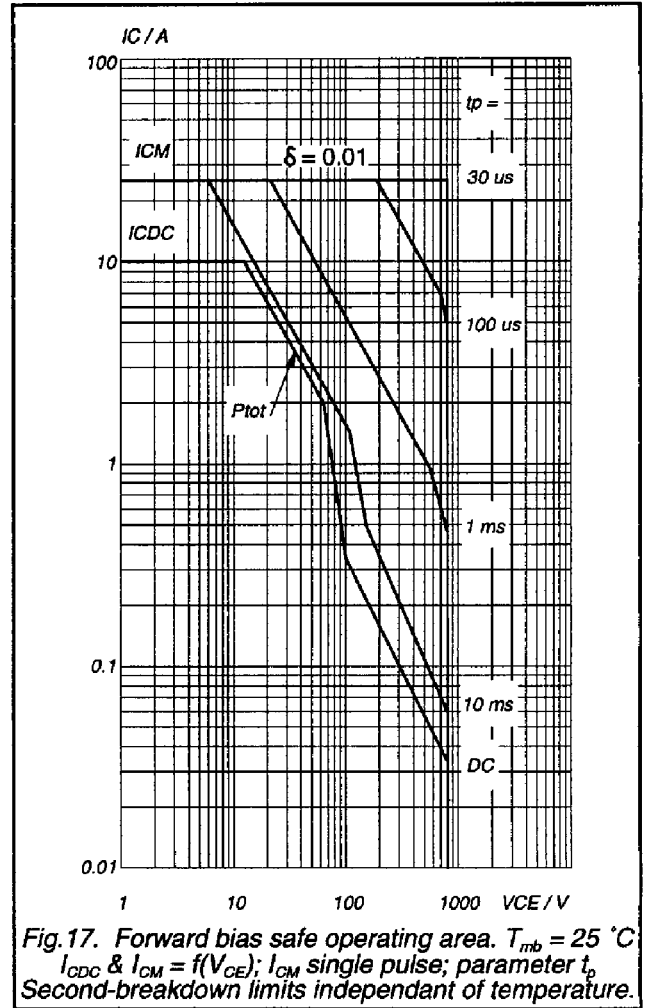
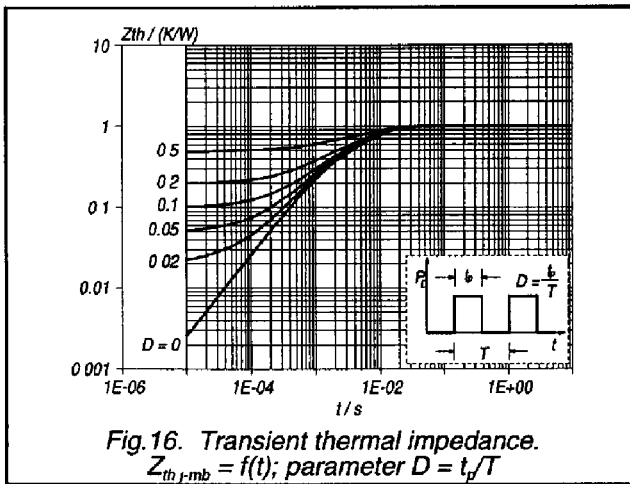
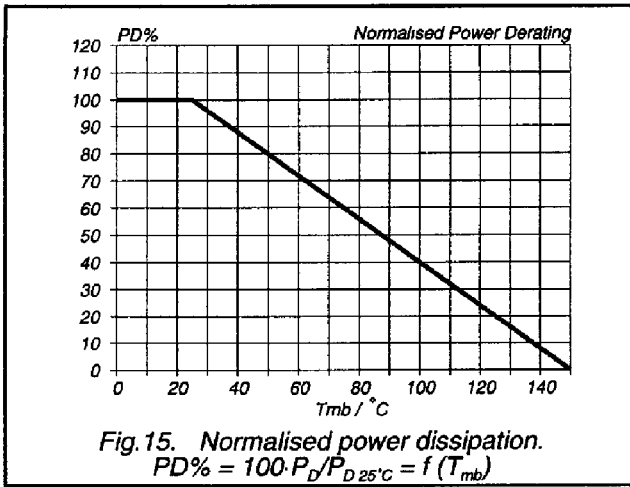
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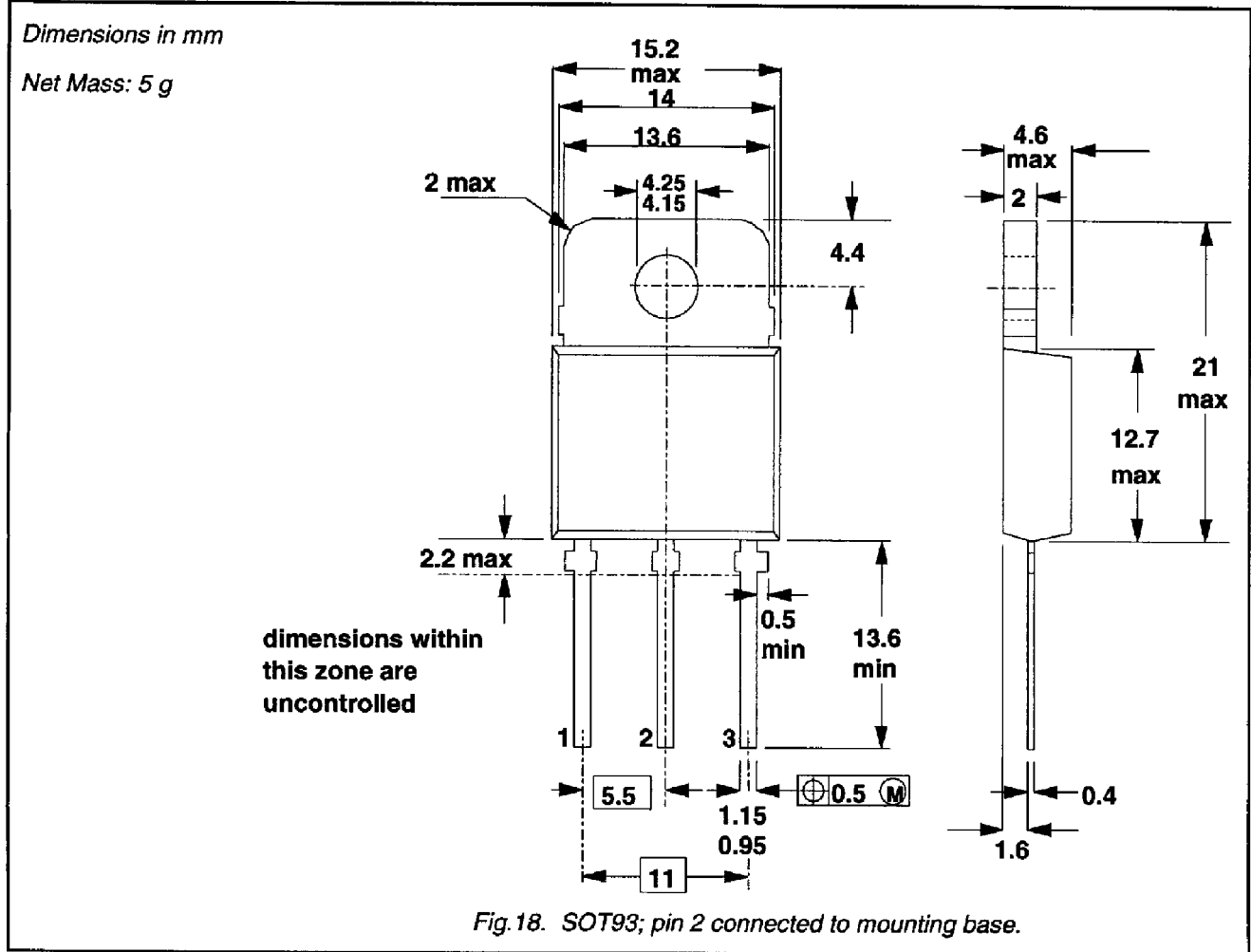
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MECHANICAL DATA



Notes

- Accessories supplied on request: refer to mounting instructions for SOT93 envelope.

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