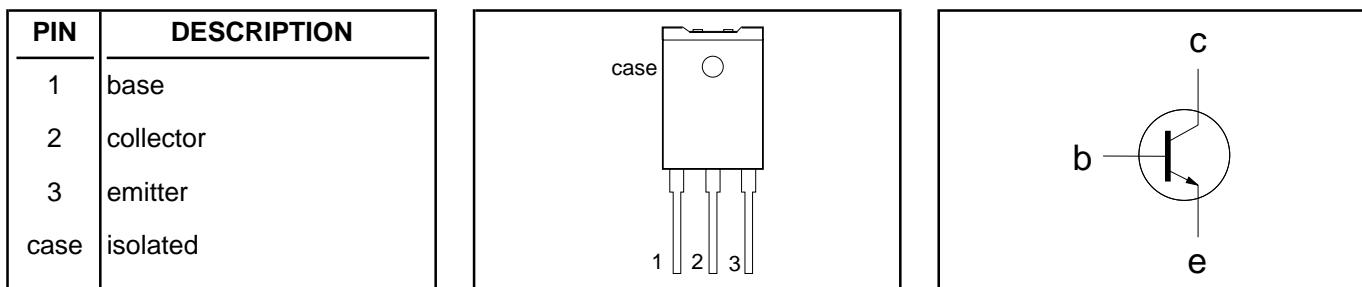


Silicon Diffused Power Transistor**BU2525AF****GENERAL DESCRIPTION**

New generation, high-voltage, high-speed switching npn transistor in a plastic full-pack 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	$V_{BE} = 0 \text{ V}$	-	1500	V
V_{CEO}	Collector-emitter voltage (open base)		-	800	V
I_C	Collector current (DC)		-	12	A
I_{CM}	Collector current peak value		-	30	A
P_{tot}	Total power dissipation	$T_{hs} \leq 25 \text{ }^\circ\text{C}$	-	45	W
V_{CEsat}	Collector-emitter saturation voltage	$I_C = 8.0 \text{ A}; I_B = 1.6 \text{ A}$	-	5.0	V
I_{Csat}	Collector saturation current		8.0	-	A
t_f	Fall time	$I_{Csat} = 8.0 \text{ A}; I_{B(end)} = 1.1 \text{ A}$	0.2	0.35	μs

PINNING - SOT199**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	$V_{BE} = 0 \text{ V}$	-	1500	V
V_{CEO}	Collector-emitter voltage (open base)		-	800	V
I_C	Collector current (DC)		-	12	A
I_{CM}	Collector current peak value		-	30	A
I_B	Base current (DC)		-	8	A
I_{BM}	Base current peak value		-	12	A
$-I_{B(AV)}$	Reverse base current	average over any 20 ms period	-	200	mA
$-I_{BM}$	Reverse base current peak value ¹		-	7	A
P_{tot}	Total power dissipation	$T_{hs} \leq 25 \text{ }^\circ\text{C}$	-	45	W
T_{stg}	Storage temperature		-65	150	$^\circ\text{C}$
T_j	Junction temperature		-	150	$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$R_{th j-hs}$	Junction to heatsink	without heatsink compound	-	3.7	K/W
$R_{th j-hs}$	Junction to heatsink	with heatsink compound	-	2.8	K/W
$R_{th j-a}$	Junction to ambient	in free air	35	-	K/W

¹ Turn-off current.

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ISOLATION LIMITING VALUE & CHARACTERISTIC $T_{hs} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	22	-	pF

STATIC CHARACTERISTICS $T_{hs} = 25^\circ\text{C}$ 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	$T_j = 125^\circ\text{C}$	-	-	1.0	mA
BV_{EBO}	Emitter-base breakdown voltage	$V_{EB} = 7.5\text{ V}; I_c = 0\text{ A}$	7.5	13.5	-	V
V_{CEO_sust}	Collector-emitter sustaining voltage	$I_B = 1\text{ mA}$	800	-	-	V
V_{CEsat}	Collector-emitter saturation voltage	$I_B = 0\text{ A}; I_c = 100\text{ mA}; L = 25\text{ mH}$	-	-	5.0	V
V_{BEsat}	Base-emitter saturation voltage	$I_c = 8.0\text{ A}; I_B = 1.6\text{ A}$	-	-	1.1	V
h_{FE}	DC current gain	$I_c = 8.0\text{ A}; I_B = 1.6\text{ A}$	-	13	-	
h_{FE}		$I_c = 100\text{ mA}; V_{CE} = 5\text{ V}$	5	7	9.5	
		$I_c = 8\text{ A}; V_{CE} = 5\text{ V}$				

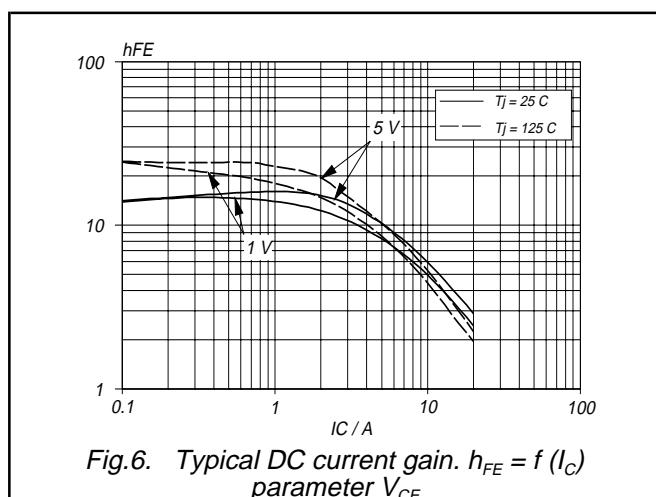
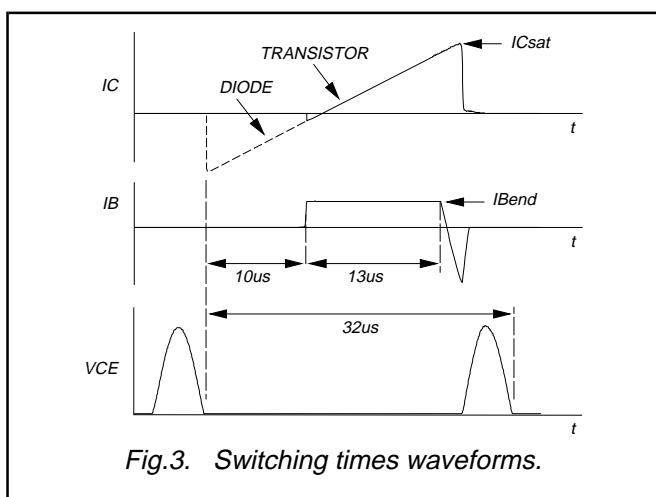
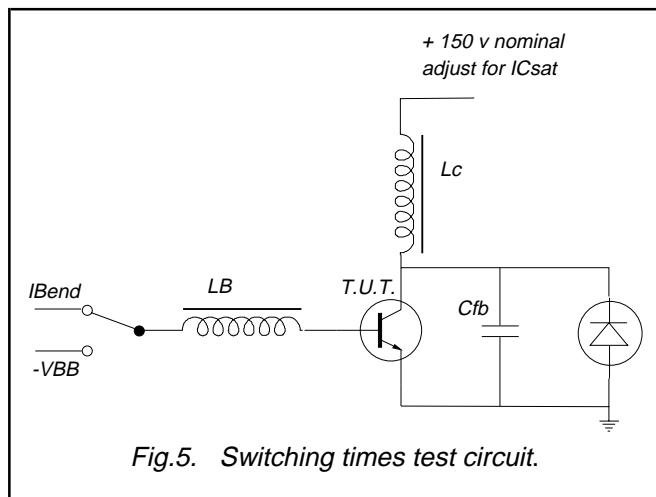
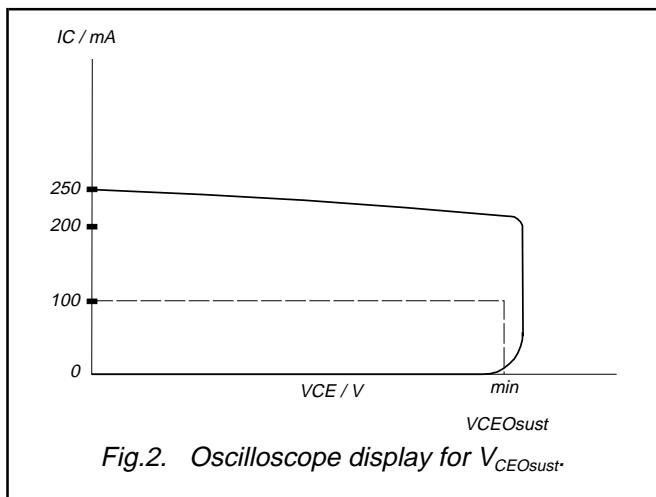
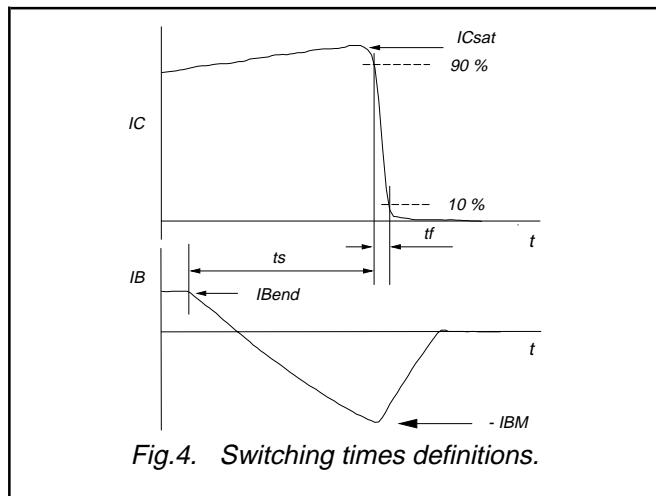
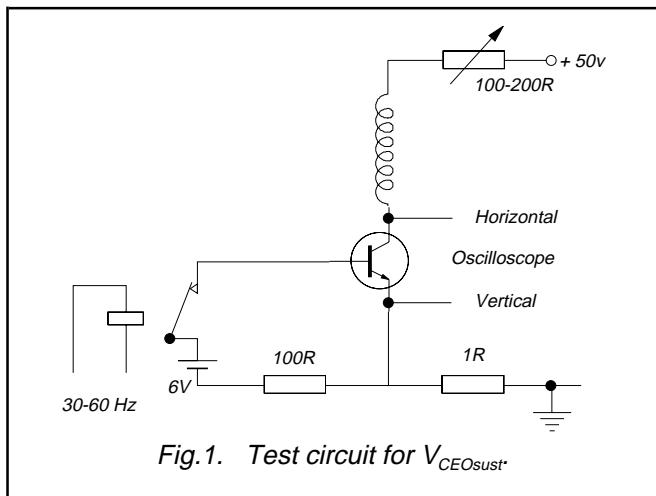
DYNAMIC CHARACTERISTICS $T_{hs} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
C_c	Collector capacitance	$I_E = 0\text{ A}; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	145	-	pF
t_s	Switching times (32 kHz line deflection circuit)	$I_{Csat} = 8.0\text{ A}; L_C = 260\text{ }\mu\text{H}; C_{fb} = 13\text{ nF}; I_{B(end)} = 1.1\text{ A}; L_B = 2.5\text{ }\mu\text{H}; -V_{BB} = 4\text{ V}; (-dI_B/dt = 1.6\text{ A}/\mu\text{s})$	3.0	4.0	μs
t_f	Turn-off storage time		0.2	0.35	μs
	Turn-off fall time				

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

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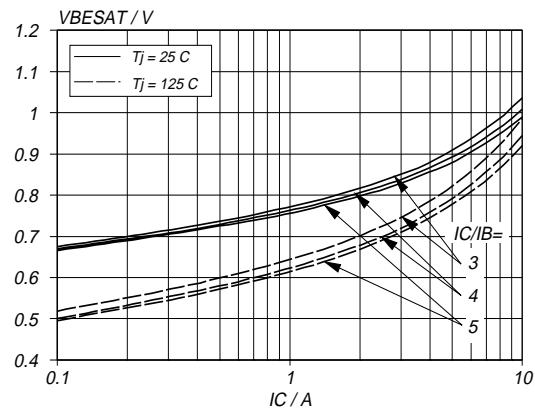


Fig.7. Typical base-emitter saturation voltage.
 $V_{BEsat} = f(I_C)$; parameter I_C/I_B

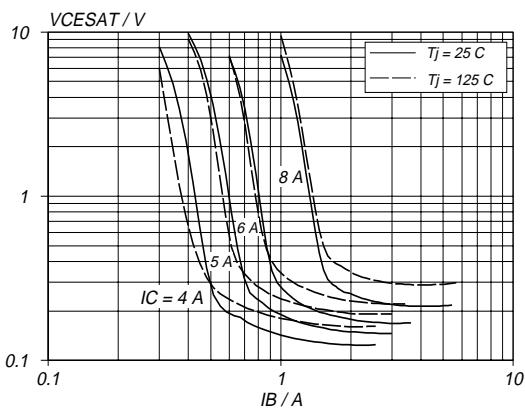


Fig.10. Typical collector-emitter saturation voltage.
 $V_{CESat} = f(I_B)$; parameter I_C

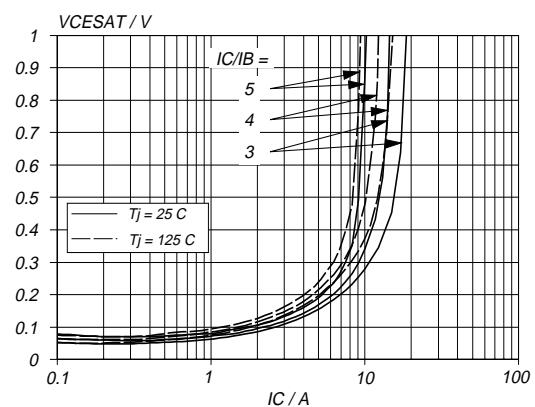


Fig.8. Typical collector-emitter saturation voltage.
 $V_{CESat} = f(I_C)$; parameter I_C/I_B

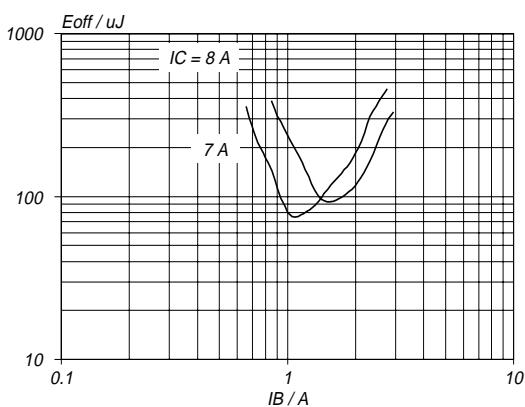


Fig.11. Typical turn-off losses. $T_j = 85^\circ C$
 $E_{off} = f(I_B)$; parameter I_C ; $f = 32$ kHz

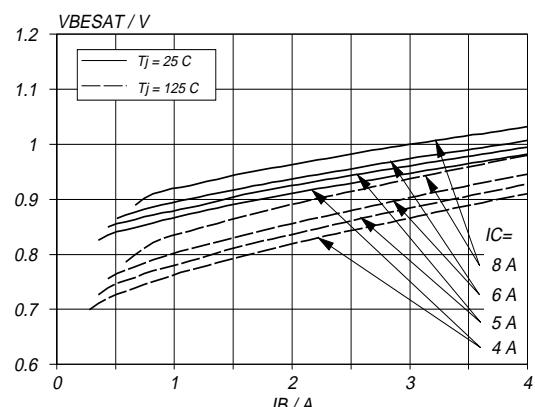


Fig.9. Typical base-emitter saturation voltage.
 $V_{BEsat} = f(I_B)$; parameter I_C

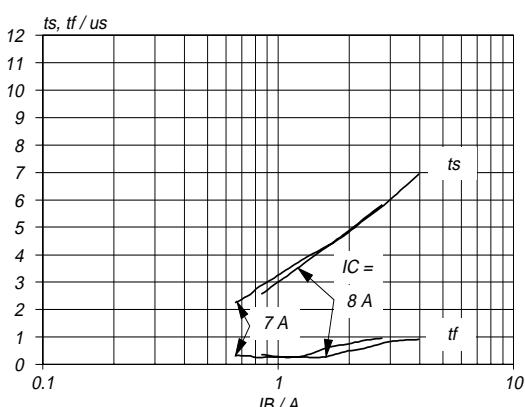


Fig.12. Typical collector storage and fall time.
 $t_s = f(I_B)$; $t_f = f(I_B)$; parameter I_C ; $T_j = 85^\circ C$; $f = 32$ kHz

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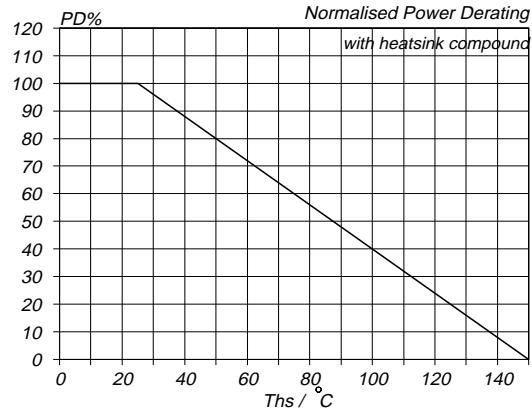


Fig.13. Normalised power dissipation.
 $PD\% = 100 \cdot P_D / P_{D,25^\circ C} = f(T_{hs})$

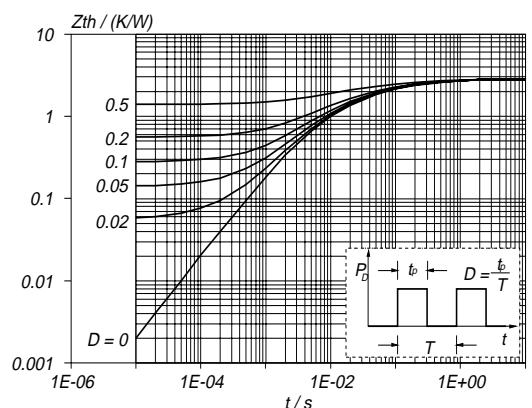


Fig.14. Transient thermal impedance.
 $Z_{th,j-hs} = f(t)$; parameter $D = t_p/T$

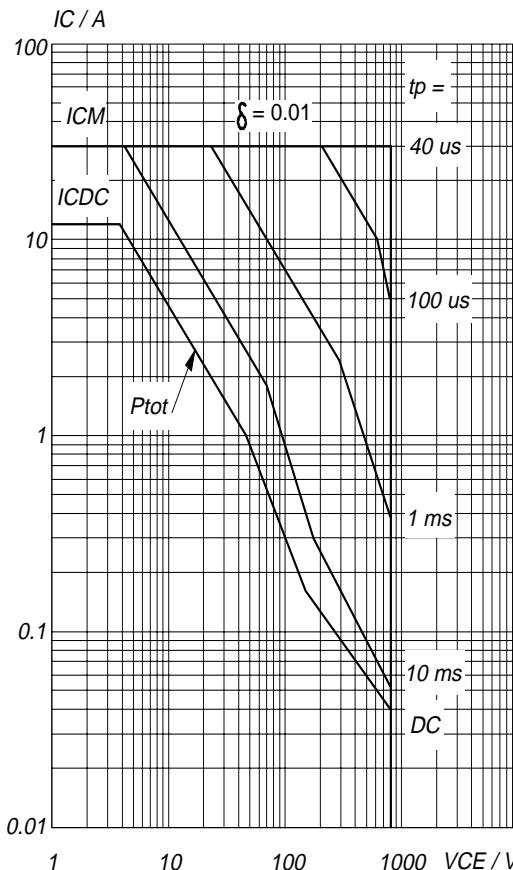


Fig.15. Forward bias safe operating area. $T_{hs} = 25^\circ C$
 $I_{CDC} \& I_{CM} = f(V_{CE})$; I_{CM} single pulse; parameter t_p .
Second-breakdown limits independant of temperature.
Mounted with heatsink compound.

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MECHANICAL DATA

Dimensions in mm

Net Mass: 5.5 g

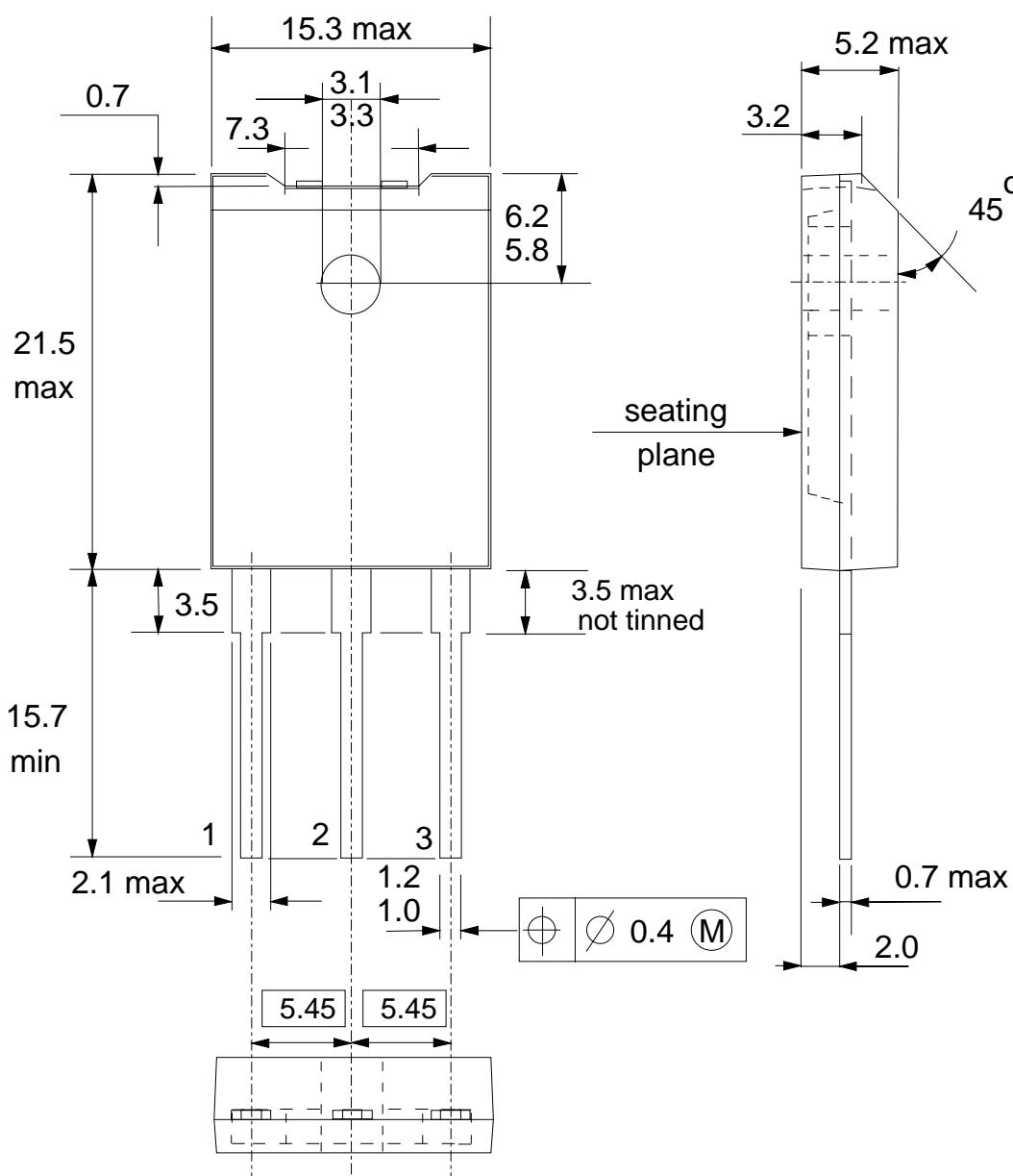


Fig.16. SOT199; The seating plane is electrically isolated from all terminals.

Notes

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".