

HIGH VOLTAGE NPN POWER TRANSISTOR

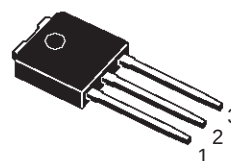
- REVERSE PINS OUT Vs STANDARD IPAK (TO-251) PACKAGE
- HIGH VOLTAGE CAPABILITY
- HIGH DC CURRENT GAIN
- THROUGH-HOLE IPAK (TO-251) POWER PACKAGE IN TUBE
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION

APPLICATIONS:

- SWITCH MODE POWER SUPPLIES

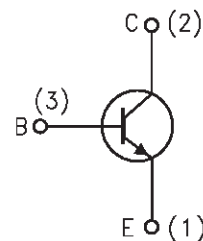
DESCRIPTION

The STD616A-1 is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage withstand capability.



IPAK
TO-251

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	1000	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	450	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	12	V
I_C	Collector Current	1.6	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	2.4	A
I_B	Base Current	0.8	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	1.2	A
P_{tot}	Total Dissipation at $T_c = 25^\circ\text{C}$	20	W
T_{stg}	Storage Temperature	-65 to 150	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150	$^\circ\text{C}$

STD616A-1

THERMAL DATA

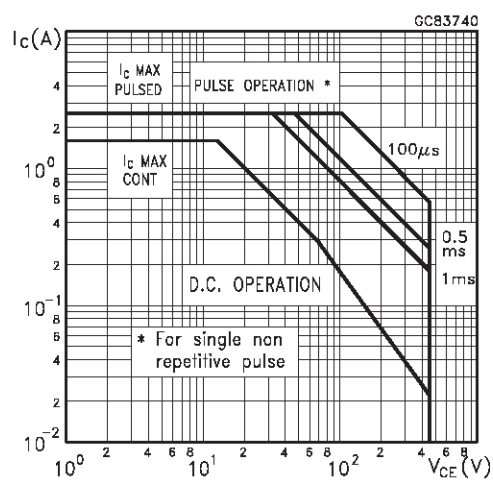
R _{thj-case}	Thermal Resistance Junction-case	Max	6.25	°C/W
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ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

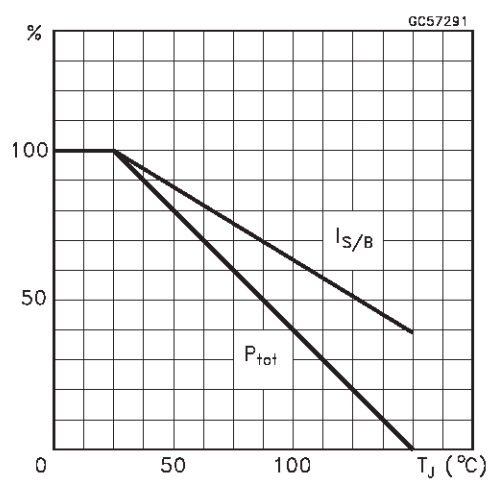
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CES}	Collector Cut-off Current (V _{BE} = 0 V)	V _{CE} = 1000 V V _{CE} = 1000 V T _j = 125 °C			50 0.5	μA mA
V _{CEO(sus)}	Collector-Emitter Sustaining Voltage	I _C = 100 mA L = 25 mH	450			V
V _{BEO}	Collector-Base Sustaining Voltage	I _C = 1 mA	12			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 250 mA I _B = 65 mA I _C = 0.8 A I _B = 250 mA			0.3 0.5	V V
V _{BE(sat)*}	Base-Emitter Saturation Voltage	I _C = 250 mA I _B = 65 mA I _C = 0.8 A I _B = 250 mA			1.0 1.2	V V
h _{FE*}	DC Current Gain	I _C = 200 μA V _{CE} = 5 V I _C = 300 mA V _{CE} = 5 V I _C = 480 mA V _{CE} = 5 V I _C = 1.6 A V _{CE} = 5 V	17 25 12 4			
t _{on} t _s t _f	RESISTIVE LOAD Turn On Time Storage Time Fall Time	V _{CC} = 250 V I _C = 250 mA I _{B1} = 65 mA I _{B2} = -130 mA			0.2 5 0.65	μs μs μs
t _{on} t _s t _f	RESISTIVE LOAD Turn On Time Storage Time Fall Time	V _{CC} = 250 V I _C = 0.8 A I _{B1} = 160 mA I _{B2} = -0.4 A			1 2.5 0.35	μs μs μs
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	V _{CL} = 300 V I _C = 250 mA I _{B1} = 65 mA I _{B2} = -130 mA L = 200 μH			5 0.5	μs μs
t _s t _f	INDUCTIVE LOAD Turn On Time Storage Time Fall Time	V _{CL} = 300 V I _C = 0.8 A I _{B1} = 160 mA I _{B2} = -0.4 A L = 200 μH			2.5 0.25	μs μs

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

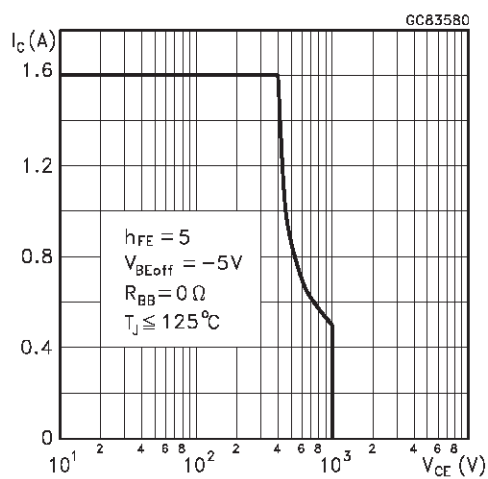
Safe Operating Area



Derating Curve

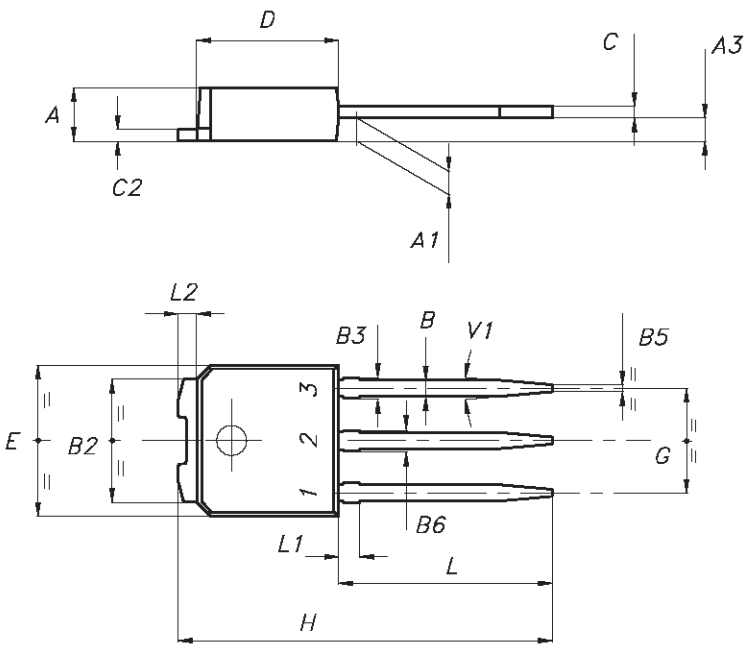


Reverse Biased SOA



TO-251 (IPAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.20		2.40	0.087		0.094
A1	0.90		1.10	0.035		0.043
A3	0.70		1.30	0.028		0.051
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.213
B3			0.85			0.033
B5		0.30			0.012	
B6			0.95			0.037
C	0.45		0.60	0.018		0.024
C2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.237		0.244
E	6.40		6.60	0.252		0.260
G	4.40		4.60	0.173		0.181
H	15.90		16.30	0.626		0.642
L	9.00		9.40	0.354		0.370
L1	0.80		1.20	0.031		0.047
L2		0.80	1.00		0.031	0.039
V1		10°			10°	



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