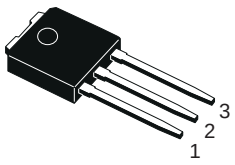
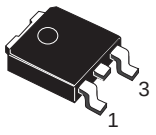
STD616A

HIGH VOLTAGE NPN POWER TRANSISTOR

- REVERSE PINS OUT Vs STANDARD IPAK (TO-251) / DPAK (TO-252) PACKAGES
- HIGH VOLTAGE CAPABILITY
- HIGH DC CURRENT GAIN
- THROUGH-HOLE IPAK (TO-251) POWER PACKAGE IN TUBE (SUFFIX "-1")
- SURFACE-MOUNTING DPAK (TO-252) POWER PACKAGE IN TAPE & REEL (SUFFIX "T4")
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION



IPAK
TO-251
(Suffix "-1")

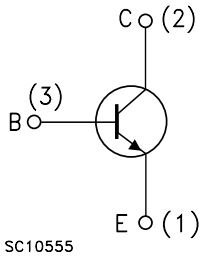


DPAK
TO-252
(Suffix "T4")

APPLICATIONS:
- SWITCH MODE POWER SUPPLIES

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

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 °C	20	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

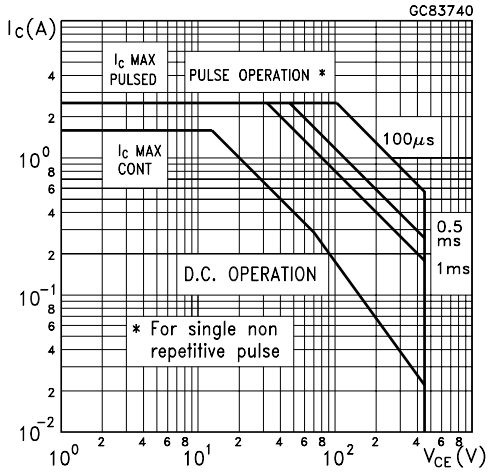
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	6.25	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

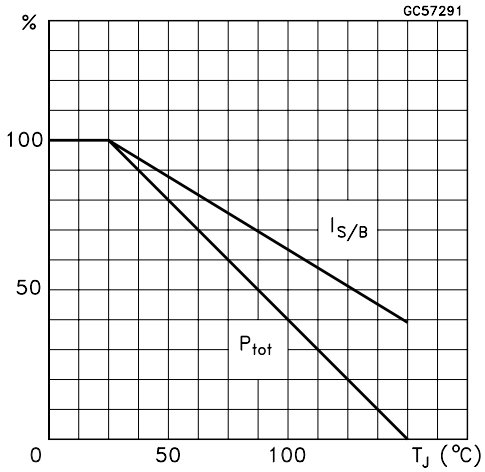
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0 V)	V_{CE} = 1000 V V_{CE} = 1000 V T_j = 125 ^oC			50 0.5	µA mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA L = 25 mH	450			V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	I_E = 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 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 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 %

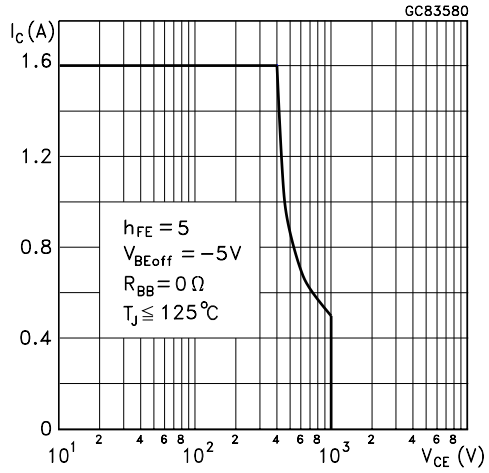
Safe Operating Area



Derating Curve

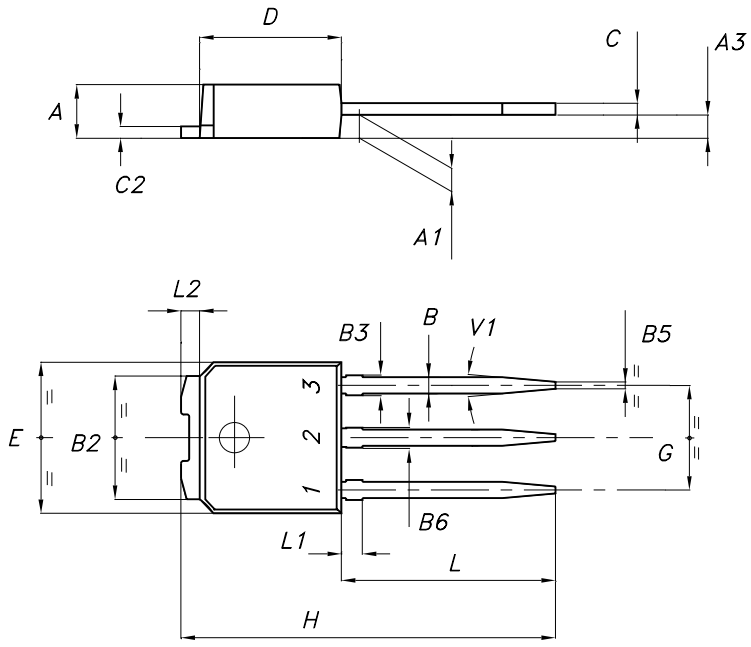


Reverse Biased SOA



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^o			10^o	



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TO-252 (DPAK) 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
A2	0.03		0.23	0.001		0.009
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.213
C	0.45		0.60	0.018		0.024
C2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.252		0.260
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.398
L2		0.8			0.031	
L4	0.60		1.00	0.024		0.039
V2	0^o		8^o	0^o		0^o