

Features

- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 328°C/W Junction to Ambient

NPN Transistor

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	500	mA

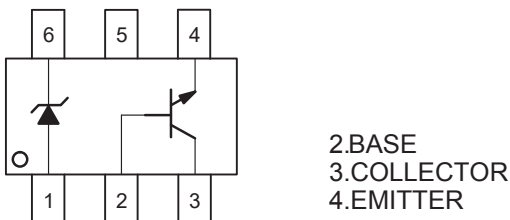
Zener Diode

Parameter	Symbol	Rating	Unit
Maximum Forward Voltage @ $I_F=10mA$	V_F	0.9	V

Total Device Dissipation

Parameter	Symbol	Rating	Unit
Total Device Dissipation	P_D	380	mW

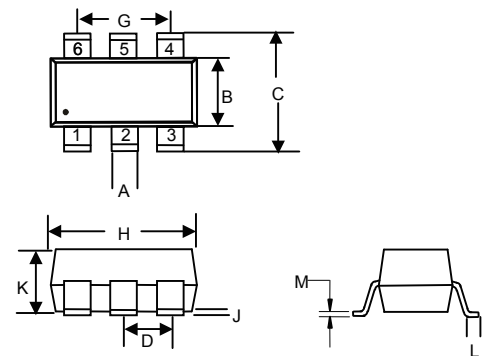
Internal Structure



Marking: 4456A

**NPN Transistor
with
Zener Diode**

SOT23-6L



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.012	0.020	0.30	0.50	
B	0.051	0.070	1.30	1.80	
C	0.087	0.126	2.20	3.20	
D	0.037		0.95		TYP.
G	0.074		1.90		TYP.
H	0.106	0.122	2.70	3.10	
J	0.002	0.006	0.05	0.15	
K	0.030	0.051	0.75	1.30	
L	0.012	0.024	0.30	0.60	
M	0.003	0.008	0.08	0.22	

NPN Transistor---Electrical Characteristics @ T_A=25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	V _{(BR)CBO}	50			V	I _C =10μA, I _E =0
Collector-Emitter Breakdown Voltage(*)	V _{(BR)CEO}	45			V	I _C =10mA, I _B =0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	5			V	I _E =1μA, I _C =0
Collector Cutoff Current	I _{CBO}			0.1	μA	V _{CB} =45V, I _E =0
Emitter-Base Cutoff Current	I _{EBO}			0.1	μA	V _{EB} =4V, I _C =0
DC Current Gain(*)	h _{FE1}	250		600		V _{CE} =1V, I _C =100mA
	h _{FE2}	40				V _{CE} =1V, I _C =500mA
Collector-Emitter Saturation Voltage	V _{CE(sat)}			0.7	V	I _C =500mA, I _B =50mA
Base-Emitter Saturation Voltage	V _{BE(sat)}			1.2	V	I _C =500mA, I _B =50mA
Base-Emitter Voltage	V _{BE}			1.2	V	V _{CE} =1V, I _C =500mA
Collector capacitance	C _{ob}		10		pF	V _{CB} =10V, f=1MHz,
Transition Frequency	f _T	100			MHz	V _{CE} =5V, I _C =10mA, f=100MHz

*.Pulse test: Pulse Width≤300μs,Duty Cycle≤2.0%.

Zener Diode---Electrical Characteristics @ 25°C Unless Otherwise Specified

MCC Part Number	Zener Voltage				Leakage Current I _R @ V _R	
		V _Z @ I _{ZT}		I _{ZT}	I _R	V _R
	Min.(V)	Nom(V)	Max.(V)	μA	μA	V
SMBT445V6	5.32	5.6	5.88	50	10	4.0

NPN Transistor---Curve Characteristics

Fig. 1 - Static Characteristics

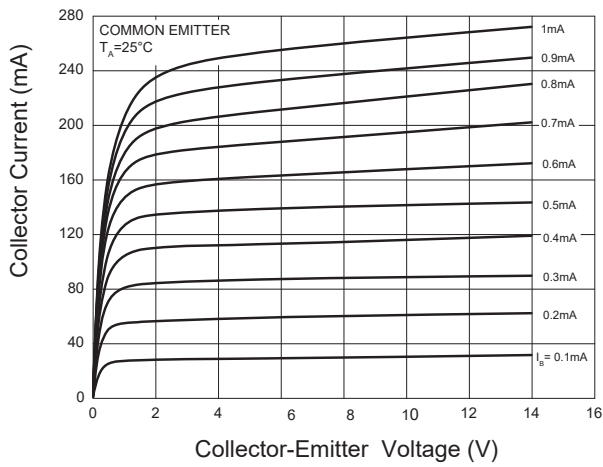


Fig. 2 - DC Current Gain Characteristics

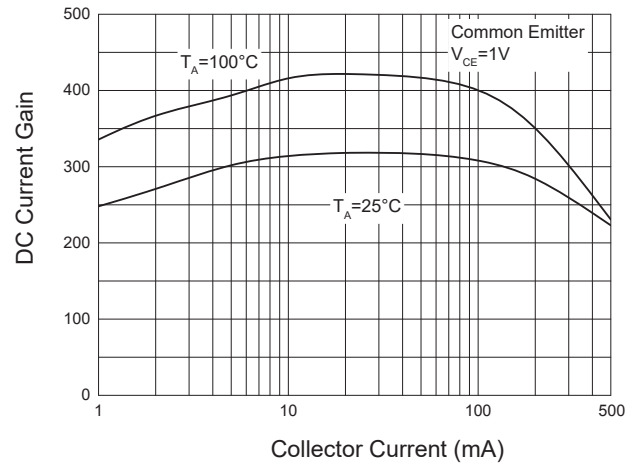


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

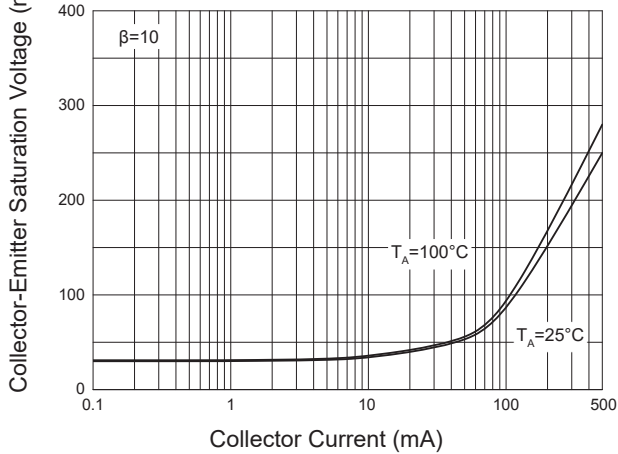
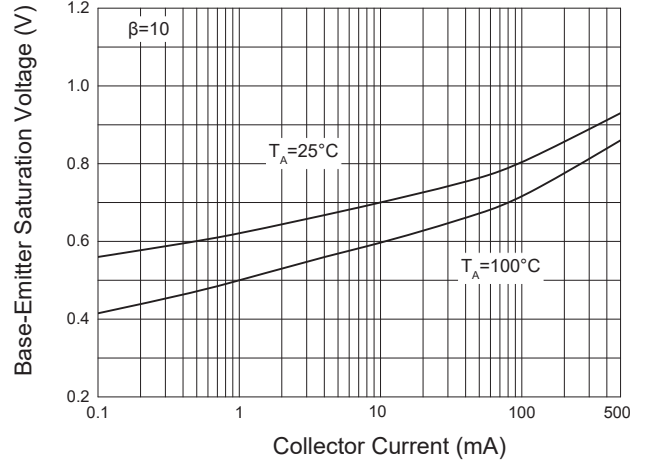
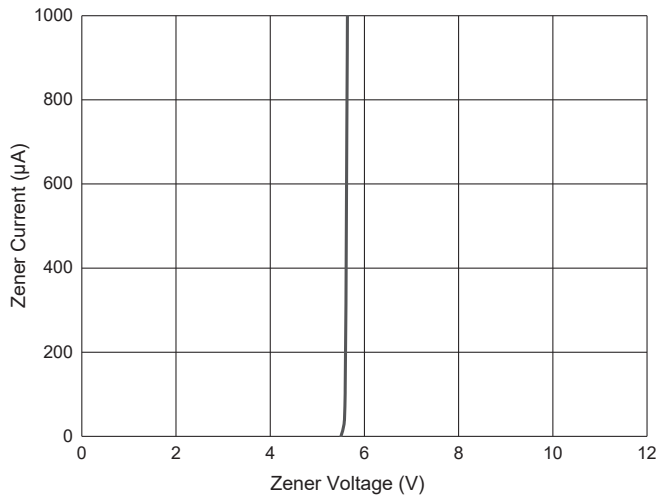


Fig. 4 - Base-Emitter Saturation Voltage Characteristics



Zener Diode---Curve Characteristics

Fig. 5 - Typical Zener Breakdown Characteristics



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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