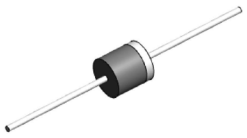
6KPE

Automotive grade 6600 W Transient voltage suppressor



Applications

- Automotive chassis and safety systems
- Advanced driver assistance systems (ADAS)
- Communication and infotainment systems
- Network systems and body electronics
- Power Train controls
- xEV and battery systems

Product features

- Automotive grade (AEC-Q101 qualified)
- Excellent clamping capability
- High reliability application
- 6600 W peak pulse power capability at 10/1000 µs waveform
- Typical I_R less than 5 µA
- Fast response time: typically less than 1.0 ps from 0 V to V_{BR} minimum
- Plastic package meets UL 94 V-0 flammability rating
- Terminal: tin plated, solderable per J-STD-002
- UL 497B recognized.
  File No. : E198449 Guide QVGQ2

Environmental compliance and general specifications

- ISO16750-2 P5A: 12 V system (87 V/1 Ω/400 ms)
- ISO16750-2 P5A: 24 V system (174 V/4 Ω/350 ms)
- AEC-Q101 qualified

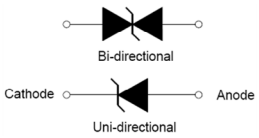
Ordering part number

6KPE 15 C A H

- Family name
- V_R voltage ("-" indicates decimal point)
- Bi-/Uni-Directional (Blank=Uni, C=Bi)
- Voltage tolerance
- High reliability application

PIN configuration





Powering Business Worldwide

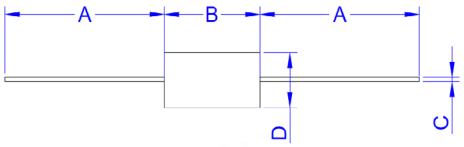
Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage operating junction temperature range	T_{STG}/ T_J	-55 to +175	°C
Steady state power dissipation at T_L= +75 °C	$P_{M(AV)}$	8.0	W
Peak pulse power dissipation on 10/1000 µs waveform	P_{PP}	6600	W
Maximum instantaneous forward voltage at 100 A for unidirectional	V_F	3.5	V
Peak forward surge current, 8.3 ms single half sine wave[1]	I_{FSM}	600	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	8.0	°C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	40	°C/W

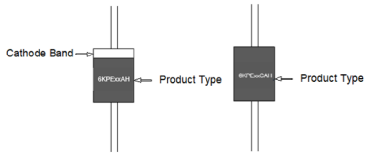
1. Measured on 8.3 ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle = 4 per minute maximum

Mechanical parameters, pad layout- mm/inches



	Millimeters		Inches	
Dimension	**Minimum**	**Maximum**	**Minimum**	**Maximum**
A	25.40	-	1.000	-
B	8.60	9.40	0.339	0.370
C	1.20	1.40	0.047	0.055
D	8.60	9.10	0.339	0.358

Part marking



Packaging information

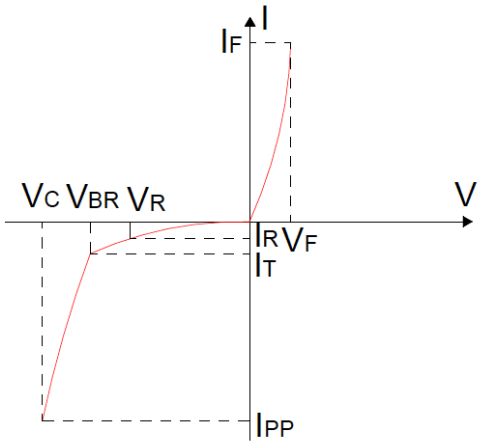
300 parts per box

Electrical specifications (+25 °C)

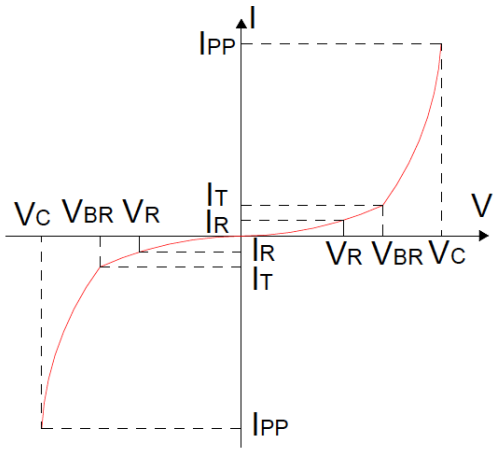
Part number		Marking		V_R	I_R @ V_R	V_{BR} @ I_T		I_T	V_C @ I_{PP}	I_{PP}	UL497B
Uni-polar	Bi-polar	Uni	Bi	(V)	(µA)	min (V)	max (V)	(mA)	max (V)	(A)	recognized
6KPE15AH	6KPE15CAH	6KPE15AH	6KPE15CAH	15	5	16.7	18.5	5	24.4	270.5	
6KPE16AH	6KPE16CAH	6KPE16AH	6KPE16CAH	16	5	17.8	19.7	5	26	253.8	
6KPE18AH	6KPE18CAH	6KPE18AH	6KPE18CAH	18	5	20	22.1	5	29.2	226	
6KPE20AH	6KPE20CAH	6KPE20AH	6KPE20CAH	20	5	22.2	24.5	5	32.4	203.7	x
6KPE22AH	6KPE22CAH	6KPE22AH	6KPE22CAH	22	5	24.4	26.9	5	35.5	186	x
6KPE24AH	6KPE24CAH	6KPE24AH	6KPE24CAH	24	5	26.7	29.5	5	38.9	169.7	x
6KPE26AH	6KPE26CAH	6KPE26AH	6KPE26CAH	26	5	28.9	31.9	5	42.1	156.8	x
6KPE28AH	6KPE28CAH	6KPE28AH	6KPE28CAH	28	5	31.1	34.4	5	45.4	145.4	x
6KPE30AH	6KPE30CAH	6KPE30AH	6KPE30CAH	30	5	33.3	36.8	5	48.4	136.4	x
6KPE33AH	6KPE33CAH	6KPE33AH	6KPE33CAH	33	5	36.7	40.6	5	53.3	123.8	x
6KPE36AH	6KPE36CAH	6KPE36AH	6KPE36CAH	36	5	40	44.2	5	58.1	113.6	x
6KPE40AH	6KPE40CAH	6KPE40AH	6KPE40CAH	40	5	44.4	49.1	5	64.5	102.3	x
6KPE43AH	6KPE43CAH	6KPE43AH	6KPE43CAH	43	5	47.8	52.8	5	69.4	95.1	x

Ratings and V-I characteristic curves (+25 °C unless otherwise noted)

V- I curve characteristics (Uni-directional)



V- I curve characteristics (Bi-directional)



Surge waveform: 10/1000 µs

V_R: Stand-off voltage – Maximum voltage that can be applied

V_{BR}: Breakdown voltage

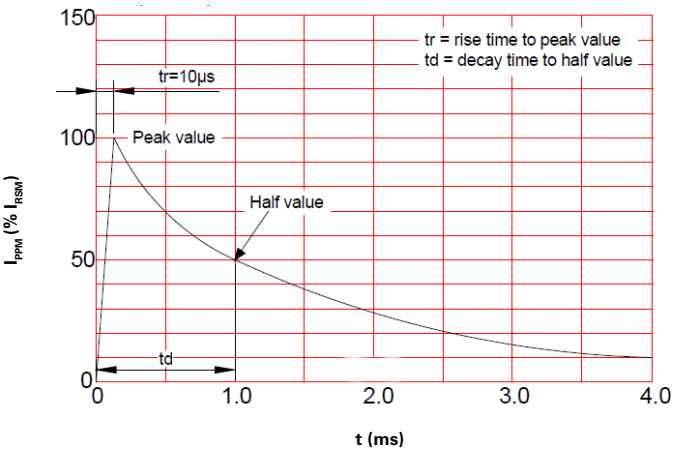
V_C: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{PP}

I_R: Reverse leakage current

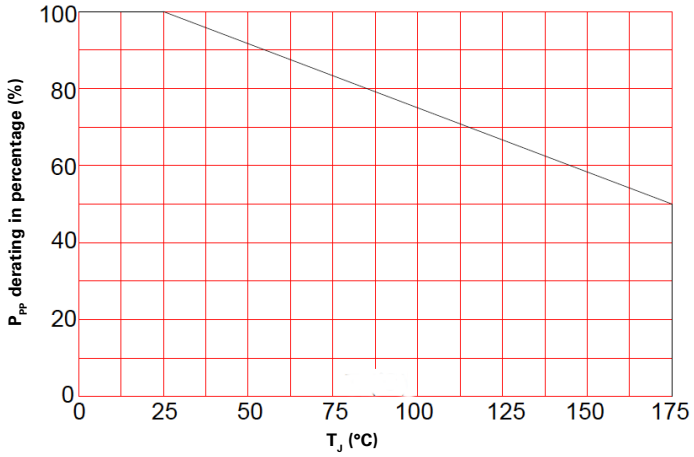
I_T: Test current

V_F: Forward voltage drop for Uni-directional

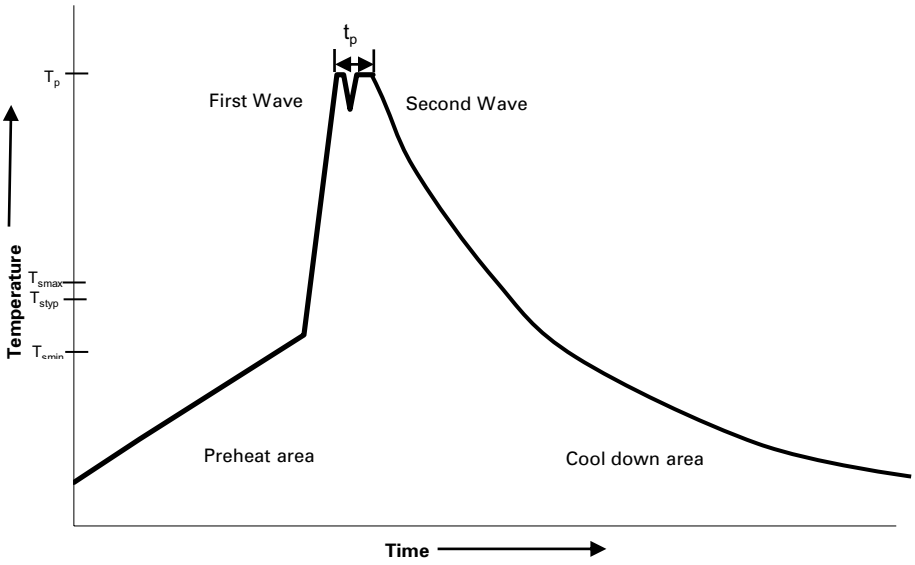
Pulse waveform



Pulse derating curve



Wave solder profile



Reference EN 61760-1:2006

Profile feature		Standard SnPb solder	Lead (Pb) free solder
Preheat	• Temperature min. (T_{smin})	100 °C	100 °C
	• Temperature typ. (T_{styp})	120 °C	120 °C
	• Temperature max. (T_{smax})	130 °C	130 °C
	• Time (T_{smin} to T_{smax}) (t_s)	70 seconds	70 seconds
Δ preheat to max Temperature		150 °C max.	150 °C max.
Peak temperature (Tp)*		235 °C – 260 °C	250 °C – 260 °C
Time at peak temperature (t_p)		10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate		~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C		4 minutes	4 minutes

Manual solder

+350 °C (4-5 seconds by soldering iron), generally manual/hand soldering is not recommended

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