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Metal oxide varistor

SMD multilayer varistor with nickel barrier termination

Series/Type: CT0603S20ACCG
Ordering code: B72500T5200S160

Date: 2007-05-10
Version: 3

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Designation system

CT = chip with three-layer-termination
0603 = dimensions of the device 06 x 03 (length x width in 1/100 inch)
S...A = special tolerance A of the varistor voltage
20 = max. operating voltage
CC = controlled capacitance
G = taped version, cardboard tape, 7" reel (4000 pcs. /reel)

Electrical data

Max. operating voltage

RMS voltage

$V_{\text{RMS}} = 20 \text{ V}$

DC voltage

$V_{\text{DC}} = 26 \text{ V}$

Varistor voltage (@ 1 mA, 25 °C)

$V_V = 30 \dots 42 \text{ V}$

Max. clamping voltage (@ 1 A)

$V_C = 67 \text{ V}$

Max. average power dissipation

$P_{\text{max}} = 3 \text{ mW}$

Max. surge current (8/20 µs)

$\hat{I}_{\text{max}} = 1 \times 30 \text{ A}$

Max. energy absorption (2 ms)

$E_{\text{max}} = 1 \times 0.3 \text{ J}$

Capacitance (@ 1 MHz, 1 V, 25 °C)

$C = 80 \pm 20 \text{ pF}$

Response time

$< 0.5 \text{ ns}$

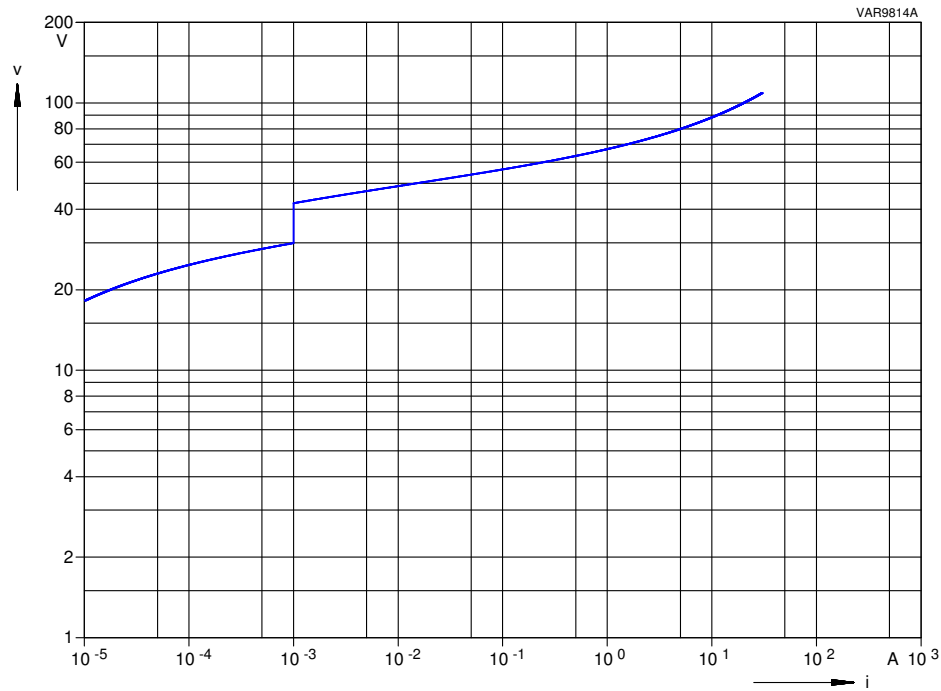
Operating temperature range

$-55 \dots +125 \text{ °C}$

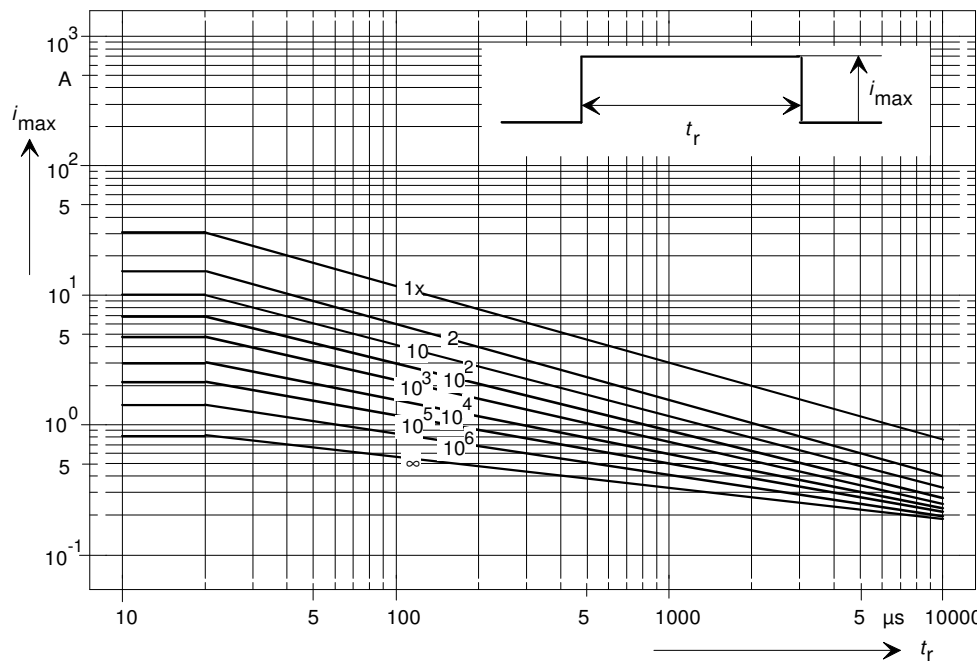
Storage temperature (mounted parts)

$-55 \dots +150 \text{ °C}$

v/i characteristic

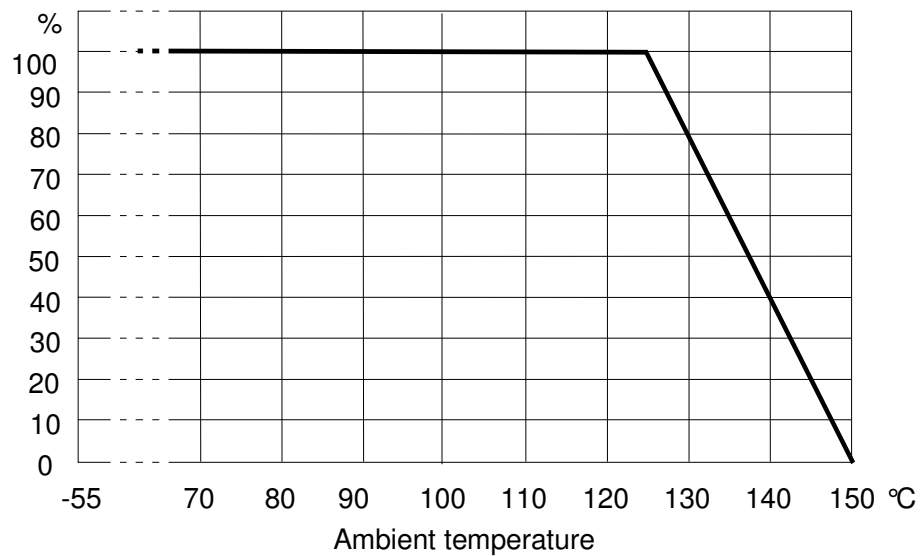


Derating field

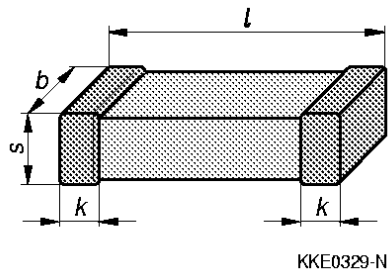


Temperature derating

Max. current, energy, operating voltage and average power dissipation depending on ambient temperature

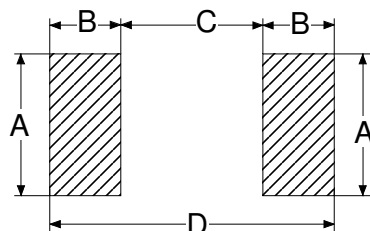


Dimensional drawing in mm



$$\begin{aligned} l &= 1.6 \pm 0.15 \\ b &= 0.8 \pm 0.1 \\ s &= 0.9 \text{ max} \\ k &= 0.1 \dots 0.4 \end{aligned}$$

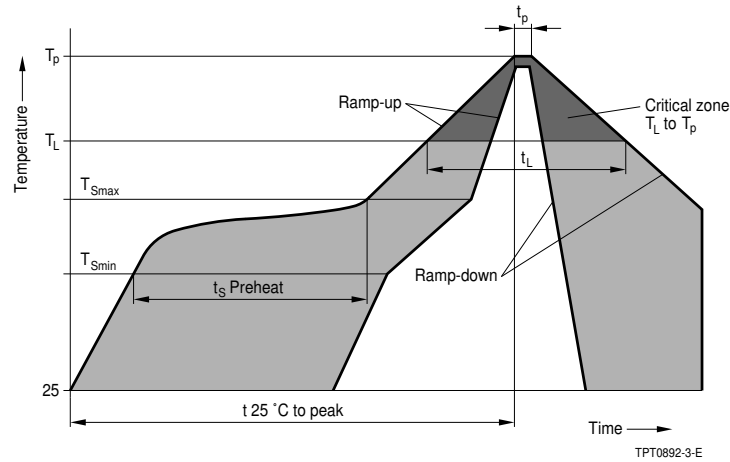
Recommended solder pad layout



$$\begin{aligned} A &= 1.0 \text{ mm} \\ B &= 1.0 \text{ mm} \\ C &= 1.0 \text{ mm} \\ D &= 3.0 \text{ mm} \end{aligned}$$

Recommended soldering temperature profiles

Reflow soldering temperature profile

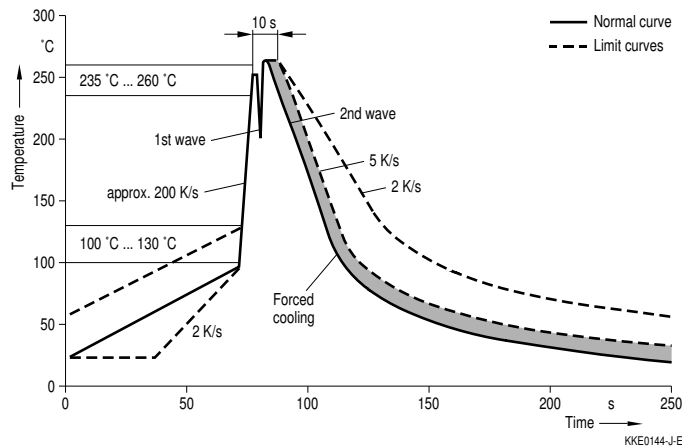


Profile feature	Sn-Pb eutectic assembly	Pb-free assembly
Average ramp-up rate (T _{Smax} to T _p)	3 °C/ second max.	3 °C/ second max.
Preheat		
- Temperature min (T _{Smin})	100 °C	150 °C
- Temperature max (T _{Smax})	150 °C	200 °C
- Time (t _{Smin} to t _{Smax})	60 ... 120 seconds	60 ... 180 seconds
Time maintained above		
- Temperature min (T _L)	183 °C	217 °C
- Time (t _L)	60 ... 150 seconds	60 ... 150 seconds
Peak classification temperature (T _p)	220 °C ... 240 °C	240 °C ... 260 °C
Time within 5 °C of actual peak temperature (t _p)	10 ... 30 seconds	20 ... 40 seconds
Ramp-down rate	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Notes: All temperatures refer to topside of the package, measured on the package body surface.
Max. number of reflow cycles: 3

Wave soldering temperature profile

Temperature characteristic at component terminal with dual-wave soldering



Soldering guidelines

The usage of mild, non-activated fluxes for soldering is recommended, as well as proper cleaning of the PCB.

The components are suitable for reflow soldering to JEDEC J-STD-020C.

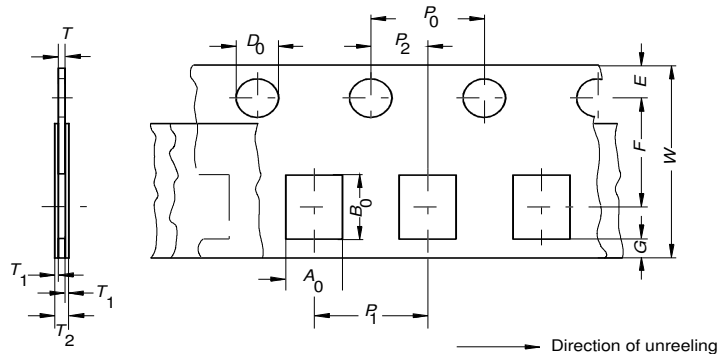
Storage condition

- As far as possible, the components should be employed within 12 months after delivery from EPCOS.
- They should be left in their original packings to avoid soldering problems due to oxidized contacts.
- Storage temperature: – 25 up to + 45 °C.
- Relative humidity: < 75 % annual average, < 95 % on max. 30 days in a year.

Taping and packaging

Tape and reel packing according to IEC 60286-3

Tape material: Cardboard



Dimensions and tolerances

Definition	Symbol	Dimension [mm]	Tolerance [mm]
Compartment width	A_0	0.95	± 0.2
Compartment length	B_0	1.8	± 0.2
Sprocket hole diameter	D_0	1.5	$+0.1 / -0$
Sprocket hole pitch	P_0	4.0	± 0.1 ¹⁾
Distance center hole to center compartment	P_2	2.0	± 0.05
Pitch of the component compartments	P_1	4.0	± 0.1
Tape width	W	8.0	± 0.3
Distance edge to center of hole	E	1.75	± 0.1
Distance center hole to center compartment	F	3.5	± 0.05
Distance compartment to edge	G	0.75	min.
Overall thickness	T_2	1.1	max.
Thickness tape	T	0.9	max.

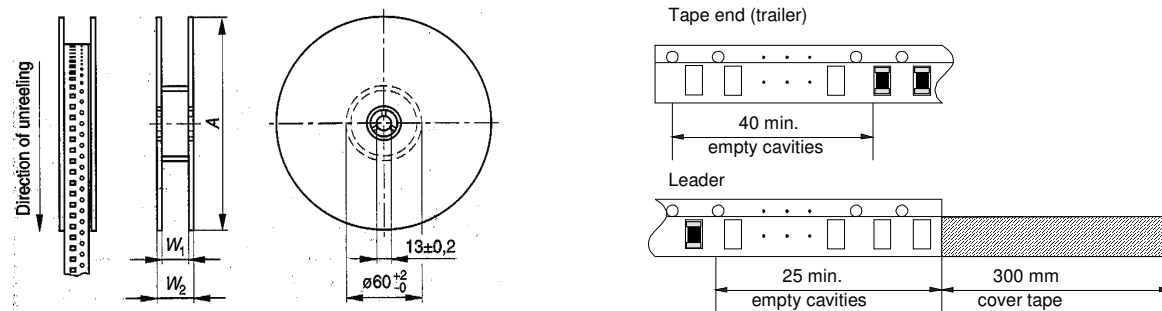
¹⁾ $\leq \pm 0.2$ mm over any 10 pitches

Package: 8-mm tape

Packing

Packing material: Plastic

Reel dimensions



Definition	Symbol	Dimension [mm]	Tolerance [mm]
Reel diameter	A	180	-3
Reel width (inside)	W ₁	8.4	+1.5 /-0
Reel width (outside)	W ₂	14.4	max.

Packing unit: 4000 pcs. /reel

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