1.5KE6V8A/440A
1.5KE6V8CA/440CA

TRANSIL™

FEATURES

- PEAK PULSE POWER : 1500 W (10/1000µs)
- BREAKDOWN VOLTAGE RANGE : From 6.8V to 440 V
- UNI AND BIDIRECTIONAL TYPES
- LOW CLAMPING FACTOR
- FAST RESPONSE TIME
- UL RECOGNIZED

CB429

DESCRIPTION

Transil diodes provide high overvoltage protection by clamping action. Their instantaneous response to transient overvoltages makes them particularly suited to protect voltage sensitive devices such as MOS Technology and low voltage supplied IC's.

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation (see note 1)	Tj initial = T_{amb}	1500	W
P	Power dissipation on infinite heatsink	T_{amb} = 75°C	5	W
I_{FSM}	Non repetitive surge peak forward current for unidirectional types	tp = 10ms Tj initial = T_{amb}	200	A
T_{stg} T_j	Storage temperature range Maximum junction temperature		- 65 to + 175 175	°C °C
T_L	Maximum lead temperature for soldering during 10s at 5mm from case		230	°C

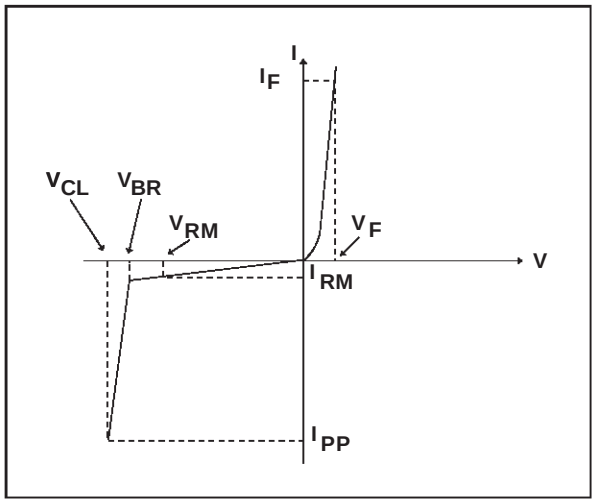
Note 1 : For a surge greater than the maximum values, the diode will fail in short-circuit.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction to leads	20	°C/W
$R_{th\ (j-a)}$	Junction to ambient on printed circuit. L_{lead} = 10 mm	75	°C/W

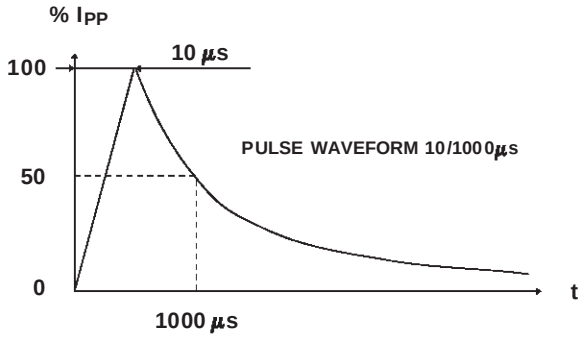
ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C)

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{CL}	Clamping voltage
I_{RM}	Leakage current @ V_{RM}
I_{PP}	Peak pulse current
αT	Voltage temperature coefficient
V_F	Forward voltage drop



Types		I_{RM} @ V_{RM} max		V_{BR} @ I_R min	nom	max		V_{CL} @ I_{PP} max 10/1000µs		V_{CL} @ I_{PP} max 8/20µs		αT max note3	C typ note4
				note2									
Unidirectional	**Bidirectional**	**µA**	**V**	**V**	**V**	**V**	**mA**	**V**	**A**	**V**	**A**	**10^{-4}/ °C**	**pF**
1.5KE6V8A	1.5KE6V8CA	1000	5.8	6.45	6.8	7.14	10	10.5	143	13.4	746	5.7	9500
1.5KE7V5A	1.5KE7V5CA	500	6.4	7.13	7.5	7.88	10	11.3	132	14.5	690	6.1	8500
1.5KE10A	1.5KE10CA	10	8.55	9.5	10	10.5	1	14.5	100	18.6	538	7.3	7000
1.5KE12A	1.5KE12CA	5	10.2	11.4	12	12.6	1	16.7	90	21.7	461	7.8	6000
1.5KE15A	1.5KE15CA	1	12.8	14.3	15	15.8	1	21.2	71	27.2	368	8.4	5000
1.5KE18A	1.5KE18CA	1	15.3	17.1	18	18.9	1	25.2	59.5	32.5	308	8.8	4300
1.5KE22A	1.5KE22CA	1	18.8	20.9	22	23.1	1	30.6	49	39.3	254	9.2	3700
1.5KE24A	1.5KE24CA	1	20.5	22.8	24	25.2	1	33.2	45	42.8	234	9.4	3500
1.5KE27A	1.5KE27CA	1	23.1	25.7	27	28.4	1	37.5	40	48.3	207	9.6	3200
1.5KE30A	1.5KE30CA	1	25.6	28.5	30	31.5	1	41.5	36	53.5	187	9.7	2900
1.5KE33A	1.5KE33CA	1	28.2	31.4	33	34.7	1	45.7	33	59.0	169	9.8	2700
1.5KE36A	1.5KE36CA	1	30.8	34.2	36	37.8	1	49.9	30	64.3	156	9.9	2500
1.5KE39A	1.5KE39CA	1	33.3	37.1	39	41.0	1	53.9	28	69.7	143	10.0	2400
1.5KE47A	1.5KE47CA	1	40.2	44.7	47	49.4	1	64.8	23.2	84	119	10.1	2050
1.5KE56A	1.5KE56CA	1	47.8	53.2	56	58.8	1	77	19.5	100	100	10.3	1800
1.5KE62A	1.5KE62CA	1	53.0	58.9	62	65.1	1	85	17.7	111	90	10.4	1700
1.5KE68A	1.5KE68CA	1	58.1	64.6	68	71.4	1	92	16.3	121	83	10.4	1550
1.5KE82A	1.5KE82CA	1	70.1	77.9	82	86.1	1	113	13.3	146	69	10.5	1350
1.5KE100A	1.5KE100CA	1	85.5	95.0	100	105	1	137	11	178	56	10.6	1150
1.5KE120A	1.5KE120CA	1	102	114	120	126	1	165	9.1	212	47	10.7	1000
1.5KE150A	1.5KE150CA	1	128	143	150	158	1	207	7.2	265	38	10.8	850
1.5KE180A	1.5KE180CA	1	154	171	180	189	1	246	6.1	317	31.5	10.8	725

Types		I_{RM} @ V_{RM} max		V_{BR} @ I_R min	nom	max		V_{CL} @ I_{PP} max 10/1000µs		V_{CL} @ I_{PP} max 8/20µs		αT max note3	C typ note4
				note2									
Unidirectional	**Bidirectional**	**µA**	**V**	**V**	**V**	**V**	**mA**	**V**	**A**	**V**	**A**	**10^{-4}/ °C**	**pF**
1.5KE200A	1.5KE200CA	1	171	190	200	210	1	274	5.5	353	28	10.8	675
1.5KE220A	1.5KE220CA	1	188	209	220	231	1	328	4.6	388	26	10.8	625
1.5KE250A	1.5KE250CA	1	213	237	250	263	1	344	5.0	442	23	11	560
1.5KE300A	1.5KE300CA	1	256	285	300	315	1	414	5.0	529	19	11	500
1.5KE350A	1.5KE350CA	1	299	332	350	368	1	482	4.0	618	16	11	430
1.5KE400A	1.5KE400CA	1	342	380	400	420	1	548	4.0	706	14	11	390
1.5KE440A	1.5KE440CA	1	376	418	440	462	1	603	3.5	776	13	11	360



Note 2 : Pulse test: t_p < 50 ms.
Note 3 : $\Delta V_{BR} = \alpha T * (T_{amb} - 25) * V_{BR}(25°C)$.
Note 4 : V_R = 0 V, F = 1 MHz. For bidirectional types, capacitance value is divided by 2.

Fig. 1: Peak pulse power dissipation versus initial junction temperature (printed circuit

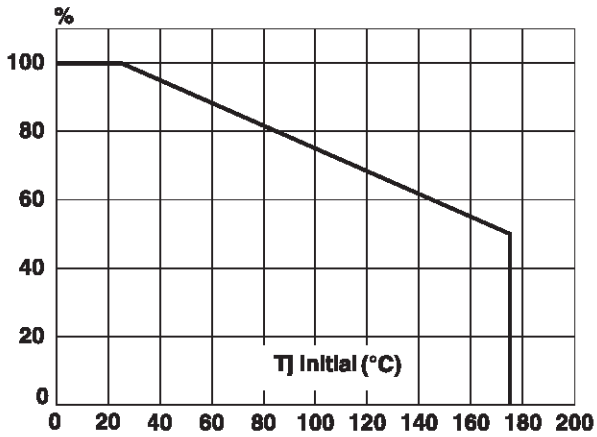


Fig. 2 : Peak pulse power versus exponential pulse duration.

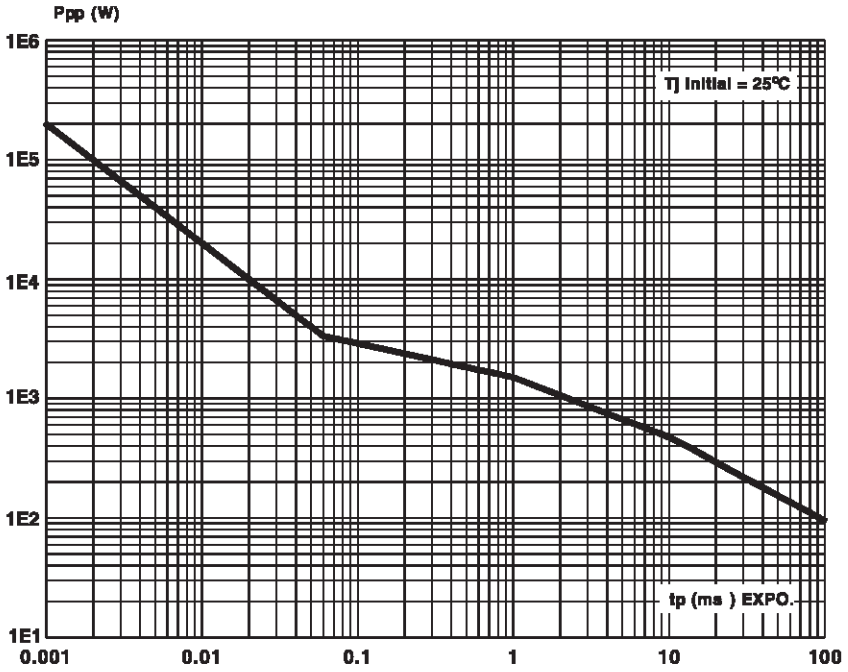
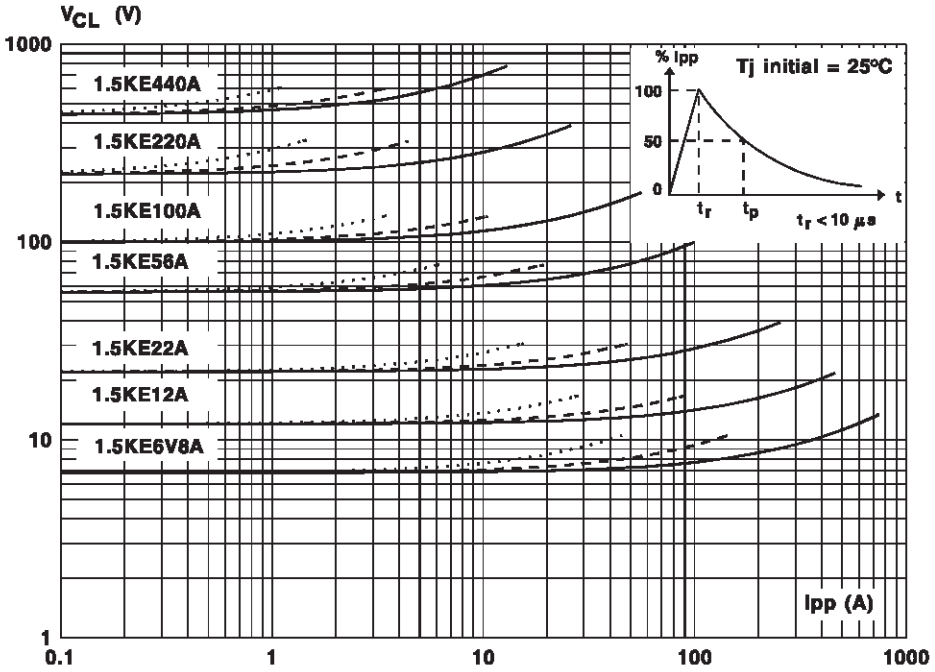


Fig. 3 : Clamping voltage versus peak pulse current.
Exponential waveform: t_p = 20 µs_____
t_p = 1 ms————-
t_p = 10 ms .....



Note : The curves of the figure 3 are specified for a junction temperature of 25°C before surge.
The given results may be extrapolated for other junction temperatures by using the following formula :
$\Delta V_{BR} = \alpha T^* (T_{amb} - 25) * V_{BR}(25°C)$.
For intermediate voltages, extrapolate the given results.

Fig. 4a : Capacitance versus reverse applied voltage for unidirectional types (typical values).

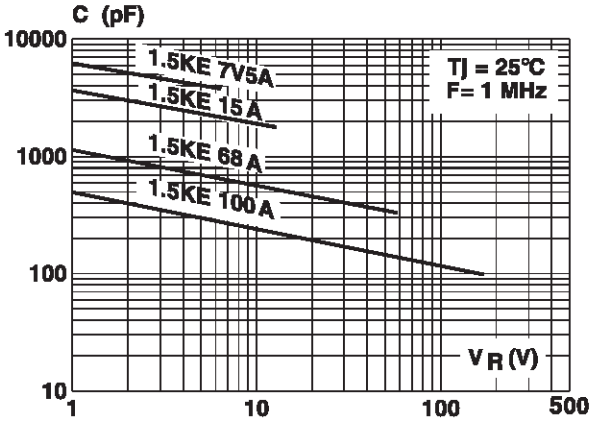


Fig. 4b : Capacitance versus reverse applied voltage for bidirectional types (typical values).

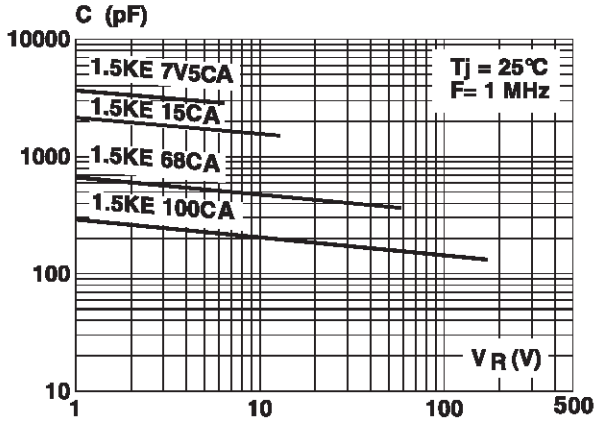


Fig. 5 : Peak forward voltage drop versus peak forward current (typical values for unidirectional types).

Note : Multiply by 2 for units with V_{BR} > 220 V.

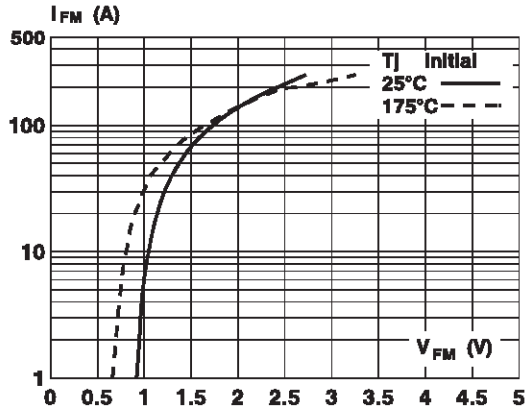


Fig. 6 : Transient thermal impedance junction-ambient versus pulse duration (For FR4 PC Board with L_{lead} = 10mm).

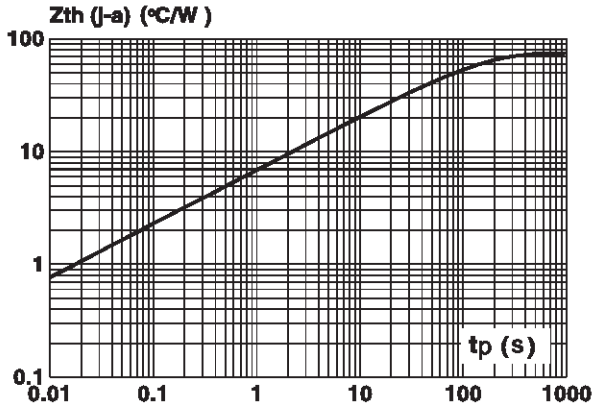
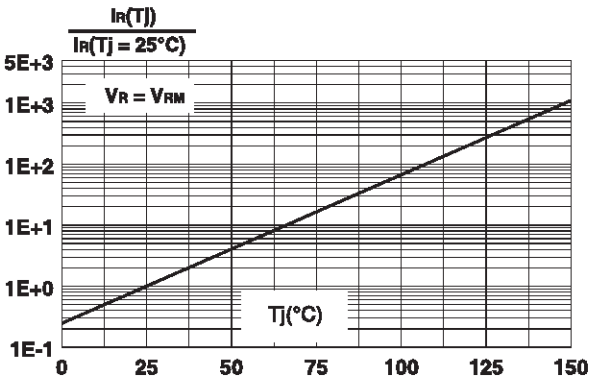


Fig. 7 : Relative variation of leakage current versus junction temperature.



ORDER CODE

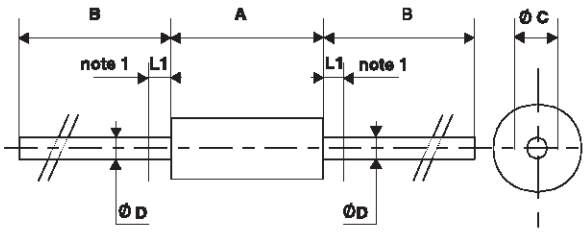
1.5 KE 100 C A RL

- 1.5 → 1500W
- 100 → BREAKDOWN VOLTAGE
- C → BIDIRECTIONAL; No suffix: Unidirectional
- RL → PACKAGING = Ammopack tape; RL = Tape & reel

MARKING : Logo, Date Code, Type Code, Cathode Band (for unidirectional types only).

PACKAGE MECHANICAL DATA

CB429 (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.45	9.50	9.80	0.372	0.374	0.386
B	26			1.024		
∅ C	4.90	5.00	5.10	0.193	0.197	0.201
∅ D	0.94	1.00	1.06	0.037	0.039	0.042
L1			1.27			0.050
Note 1 : The lead is not controlled within zone L_1						

Packaging : standard packaging is in tape and reel.

Weight = 0.85 g.

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