



DIVISION SEMICONDUCTEURS

59C 02690

D T-11-23

ICTE 5S, C → ICTE 45, C

UNI — AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS
DIODES DE PROTECTION UNI — ET BIDIRECTIONNELLES

TRANSIL

TRANSIENT VOLTAGE SUPPRESSOR DIODES ESPECIALLY USEFUL IN PROTECTING INTEGRATED CIRCUITS, MOS, HYBRIDS AND OTHER VOLTAGE-SENSITIVE SEMICONDUCTORS AND COMPONENTS

- HIGH SURGE CAPABILITY : 1,5 kW/1 ms expo.
18 kW/8-20 μ s expo.
- VERY FAST CLAMPING TIME : 1 ps for unidirectional types
5 ns for bidirectional types
- LARGE VOLTAGE RANGE : 5V → 45V

DIODES ECRETEUSES ADAPTEES A LA PROTECTION DES CIRCUITS INTEGRES, MOS, CIRCUITS HYBRIDES, AUTRES SEMICONDUCTEURS ET COMPOSANTS SENSIBLES AUX SURTENSIONS.

- GRANDE CAPACITE DE SURCHARGE : 1,5 kW/1 ms expo.
18 kW/8-20 μ s expo.
- TEMPS D'ECRETAGE TRES RAPIDE :
1 ps pour types unidirectionnels
5 ns pour types bidirectionnels
- GAMME DE TENSION ETENDUE : 5V → 45V

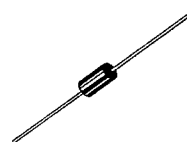
P_D : 1,5 kW/1 ms expo.
18 kW/8-20 μ s expo.

 V_{RM} : 5V → 45V

Type number → Unidirectional types

Type number + suffix C → Bidirectional types

Case : CB-429 plastic
Boîtier : note 2

ABSOLUTE RATINGS (LIMITING VALUES)
VALEURS LIMITEES ABSOLUES D'UTILISATION

Peak pulse power for 1 ms exponential pulse <i>Puissance de crête pour une onde exponentielle de 1 ms</i>	T_J initial = 25°C (cf note 1)	P_p	1,5	kW
Power dissipation on infinite heatsink <i>Dissipation de puissance sur radiateur infini</i>	$T_{amb} = 75^\circ\text{C}$	P	5	W
Non repetitive surge peak forward current for unidirectional types <i>Courant direct non répétitif de surcharge accidentelle pour types unidirectionnels</i>	T_J initial = 25°C $t = 10$ ms	I_{FSM}	250	A
Storage and junction temperatures <i>Températures de jonction et de stockage</i>	T_J T_{stg}		175 -65 → +175	°C °C
Maximum lead temperature for soldering during 10 s at 4 mm from case <i>Température maximum de soudure des connexions pendant 10 s à 4 mm du boîtier</i>		T_L	230	°C

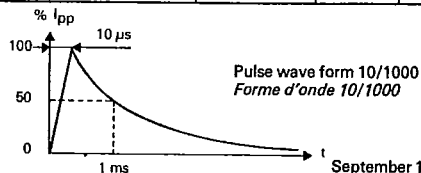
Junction - connexions thermal resistance on infinite heatsink ($L_{lead} = 10$ mm)
Résistance thermique jonction - connexions sur radiateur infini ($L_{connex.} = 10$ mm)

$R_{th(j-c)}$ 20 °C/W

Note 1 : For surges upper than the maximum values, the diode will present a short-circuit anode-cathode.

Pour des surcharges supérieures aux valeurs maximales, la diode présentera un court-circuit anode-cathode.

Note 2 : Please consult us for types in DO 13 case.
Nous consulter pour version en boîtier DO 13.



50, rue Jean-Pierre Timbaud - B.P. 5
F - 92403 Courbevoie Cedex FRANCE
Tél. : (1) 788-50-01 Telex : 610560 F

365

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THOMSON
COMPOSANTS

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ELECTRICAL CHARACTERISTICS
CARACTERISTIQUES ELECTRIQUESStand-off voltage : V_{RM}
Tension de veille : V_{RM} Peak pulse current : I_{pp}
Courant de crête : I_{pp} Breakdown voltage : $V_{(BR)}$
Tension d'avalanche : $V_{(BR)}$ Temperature coefficient of $V_{(BR)}$: αT
Coefficient de température de $V_{(BR)}$: αT Clamping voltage : $V_{(CL)}$
Tension d'écrêtage : $V_{(CL)}$ Capacitance : C
Capacité : C Clamping time (0 Volt to $V_{(BR)}$) : $t_{clamping} < 1$ ps for unidirectional types
Temps de réponse (0 Volt à $V_{(BR)}$) : $t_{clamping} < 5$ ns for bidirectional types

Types		I_{RM} @ V_{RM}		$V_{(BR)}^*$ @ I_R min		$V_{(CL)}$ @ I_{pp} max 1 ms expo		$V_{(CL)}$ @ I_{pp} max 1 ms expo		I_{pp} max 1 ms expo	I_{pp} max 8-20 μ s expo	αT max	C^{**} typ $V_R = 0$ $f = 1$ MHz
Unidirectional	Bidirectional	(μ A)	(V)	(V)	(mA)	(V)	(A)	(V)	(A)	(A)	(A)	($10^{-4}/^{\circ}C$)	(pF)
ICTE 5S	ICTE 5 SC	300	5	5,5	1	6,8	1	6,9	10	170	1570	5,7	26000
ICTE 5	ICTE 5 C	300	5	6,0	1	7,1	1	7,5	10	160	1340	5,7	22000
ICTE 8	ICTE 8 C	25	8	9,4	1	11,3	1	11,5	10	100	920	7,3	13000
ICTE 10	ICTE 10 C	2	10	11,7	1	13,7	1	14,1	10	90	830	8,1	8800
ICTE 12	ICTE 12 C	2	12	14,1	1	16,1	1	16,5	10	70	630	8,4	7800
ICTE 15	ICTE 15 C	2	15	17,6	1	20,1	1	20,6	10	60	550	8,8	6200
ICTE 18	ICTE 18 C	2	18	21,2	1	24,2	1	25,2	10	50	440	9,4	4600
ICTE 22	ICTE 22 C	2	22	25,9	1	29,8	1	32,0	10	40	360	9,6	4200
ICTE 36	ICTE 36 C	2	36	42,4	1	50,6	1	54,3	10	23	230	10,1	2200
ICTE 45	ICTE 45 C	2	45	52,9	1	63,3	1	70,0	10	19	170	10,3	1850

* Pulse test

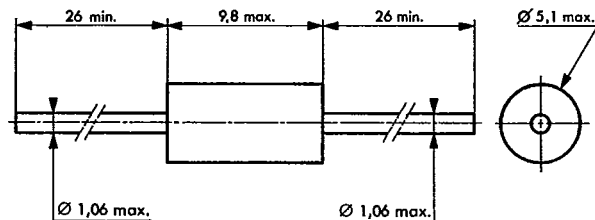
Mesure en impulsion $t_p \leq 50$ ms $\delta < 2\%$

** Divide these values by 2 for bidirectional types

Diviser ces valeurs par 2 pour les types bidirectionnels

For bidirectional types, electrical characteristics apply in both directions.

Pour les types bidirectionnels, les caractéristiques électriques sont applicables dans les 2 sens.

CASE DESCRIPTION
DESCRIPTION DU BOITIER

Cooling method : by convection (method A)

Mode de refroidissement : par convection (mode A)

Marking : type number ; white band indicates cathode for unidirectional types

Marquage : n° de type ; anneau blanc côté cathode pour les types unidirectionnels.

Weight : 0,9 g

Poids

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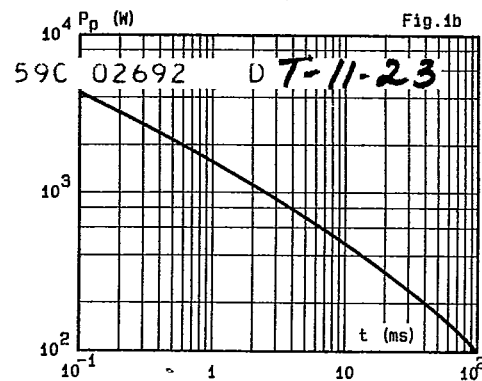
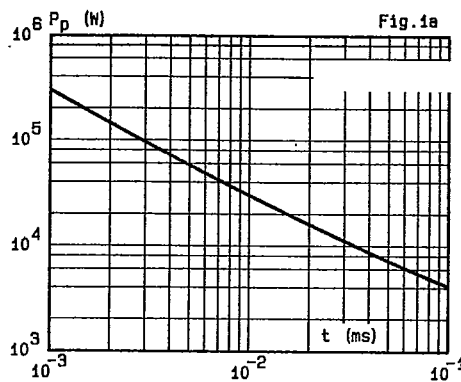
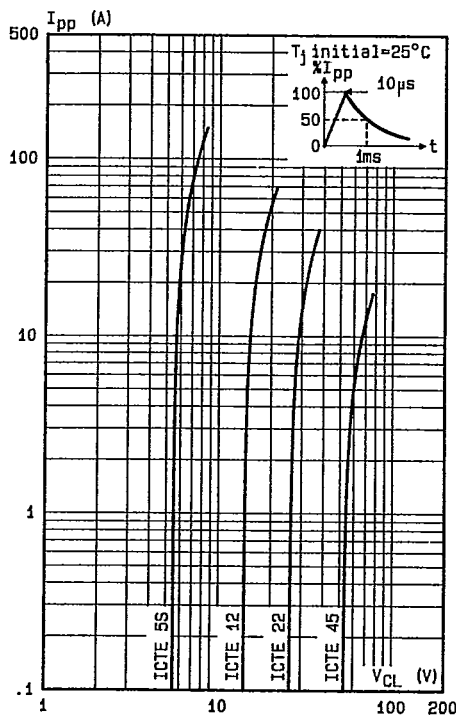
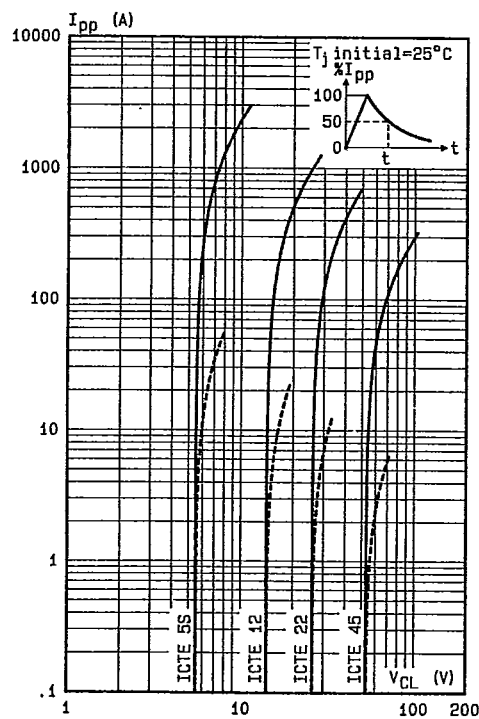


Fig. 1a-1b - Peak pulse power versus exponential pulse duration.

Fig. 2 - Peak pulse current versus clamping voltage (exponential waveform $t=1\text{ms}$).Fig. 3 - Peak pulse current versus clamping voltage (exponential waveform $t=10\mu\text{s}$ — and $t=10\text{ms}$ ---).

Note: The curves of figures 2 and 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:

$$\Delta V_{(BR)} = \alpha_T (V_{(BR)}) \times [T_j - 25] \times V_{(BR)}$$

For intermediate voltages, extrapolate the given results.

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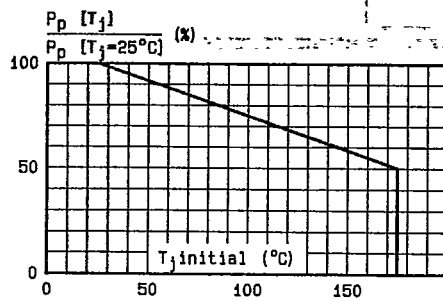


Fig. 4 - Allowable power dissipation versus junction temperature.

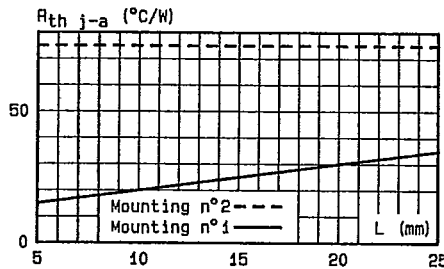


Fig. 6 - Thermal resistance junction-ambient versus lead length.

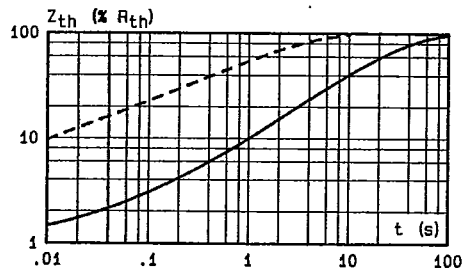


Fig. 7 - Transient thermal impedance junction-connections for mounting n°1 (curve ---) and junction-ambient for mounting n°2 (curve —) versus pulse duration (L=10mm).

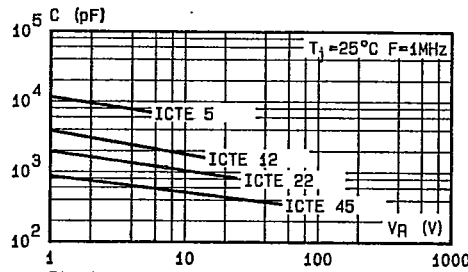


Fig. 9 - Capacitance versus reverse applied voltage for unidirectional types (typical values).

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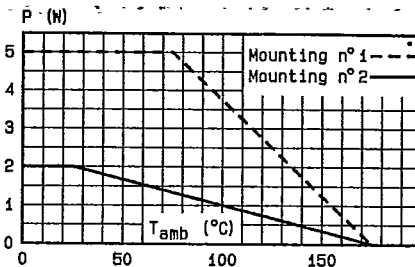


Fig. 5 - Power dissipation versus ambient temperature.

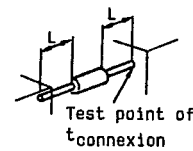
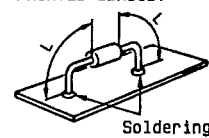
Mounting n°1
INFINITE HEATSINKMounting n°2
PRINTED CIRCUIT

Fig. 8 - Peak forward current versus peak forward voltage drop (typical values for unidirectional types).

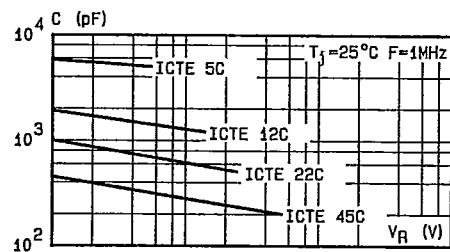
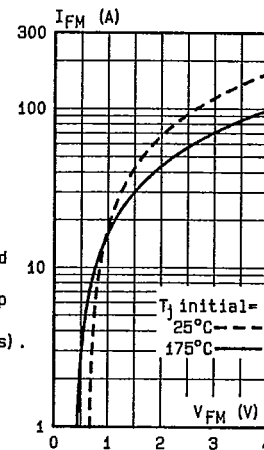


Fig. 10 - Capacitance versus reverse applied voltage for bidirectional types (typical values).