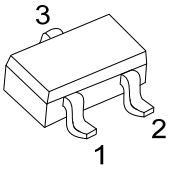
TWO-DIRECTIONAL ESD / TRANSIENT PROTECTION DIODE



SOT-23
(JEDEC TO-236)

■ DESCRIPTION

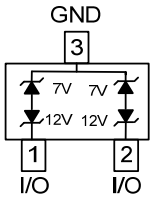
The UTC **USM712** is TVS Diode Array is designed to protect RS-485 applications with asymmetrical working voltages (-7V to 12V) from damage due to electrostatic discharge (ESD), electrical fast transients (EFT), and lightning induced surges.

The **USM712** can absorb repetitive ESD strikes above the aximum level specified in the IEC61000-4-2 international standard without performance degradation and safely issipate up to 7A of 8/20us induced surge current (IEC61000-4-5 2nd edition) with very low clamping voltages.

■ FEATURES

* 150W peak pulse power(8/20μs)
* Operating Voltages: 7V to 12V
* Low clamping voltage
* Low leakage current

■ SYMBOL

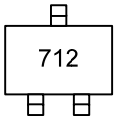


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USM712L-AE3-R	USM712G-AE3-R	SOT-23	I/O	I/O	GND	Tape Reel

USM712G-AE3-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
ESD Discharge	IEC61000-4-2	Air Discharge	V_{ESD}	±30	kV
		Contact Discharge		±30	kV
Peak Pulse Current	IEC61000-4-5	t_p=8/20μs	I_{PP}	7	A
Peak Pulse Power			P_{PK}	150	W
Operating Junction Temperature			T_J	-55 ~ +125	°C
Operating Temperature			T_{OPR}	-40 ~ +125	°C
Storage Temperature			T_{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reverse Stand-Off Voltage	V_{RWM}	Pin 3 to Pin 1 and Pin 3 to Pin 2			7	V
		Pin 1 to Pin 3 and Pin 2 to Pin 3			12	V
Reverse Breakdown Voltage	V_{BR}	I_R=1mA, Pin 3 to Pin 1 and Pin 3 to Pin 2	7.5			V
		I_R=1mA, Pin 1 to Pin 3 and Pin 2 to Pin 3	13.3			V
Reverse Current	I_R	V_R= V_{RWM}		0.01	0.5	uA
Diode capacitance	C_d	V_R=0V, f=1MHz		85		pF
		V_R=V_{RWM}, f=1MHz		60		pF
Clamping Voltage	V_{CL}	I_{PP}=1A, t_P=8/20μs, Pin 3 to Pin 1 and Pin 3 to Pin 2			11	V
		I_{PP}=1A, t_P=8/20μs, Pin 1 to Pin 3 and Pin 2 to Pin 3			19	V
		I_{PP}=7A, t_P=8/20μs, Pin 3 to Pin 1 and Pin 3 to Pin 2			15	V
		I_{PP}=7A, t_P=8/20μs, Pin 1 to Pin 3 and Pin 2 to Pin 3			25	V

Note: Device stressed with 8/20μs exponential decay waveform according to IEC 61000-4-5.

■ TYPICAL CHARACTERISTICS