SOT-23 Plastic-Encapsulate CAN bus ESD Protection Diodes

DESCRIPTION

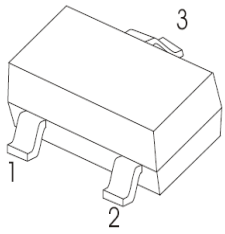
The SM24QC has been desigened to protect the CAN transciver in high-speed and fault tolerant networks fromm ESD and other harmful transient voltage events.This device provides bidirectional protection for each data line with a single compact SOT-23 package,giving the system designer a low cost option for improving system reliability and meeting stringent EMI requirements.

Features

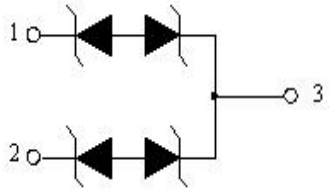
- 200W peak pulse power (8/20μs)
- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lighting) 3A (8/20μs)
- Working voltages : 24V
- Low clamping voltage
- Low leakage current

Pin Configuration

RoHS COMPLIANT



Circuit Diagram



Applications

- DeviceNet
- Low and High Speed CAN
- Smart Distribution Systems (SDS)
- Controlled Area Network − CAN 2.1 / CAN FD

Mechanical Characteristics

- Package: SOT-23
- Lead Finish: Matte Tin
- Flammability Rating: UL 94V-0
- Packaging: Tape and Reel
- Marking: C24

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	± 30 ± 20	kV
Peak Pulse Power(tp=8/20us waveform)	P_{PP}	200	W
Operating Temperature	T_{OPT}	−55 to +150	°C
Storage Temperature Range	T_{STG}	−55 to +150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T_L	260(10 sec.)	°C

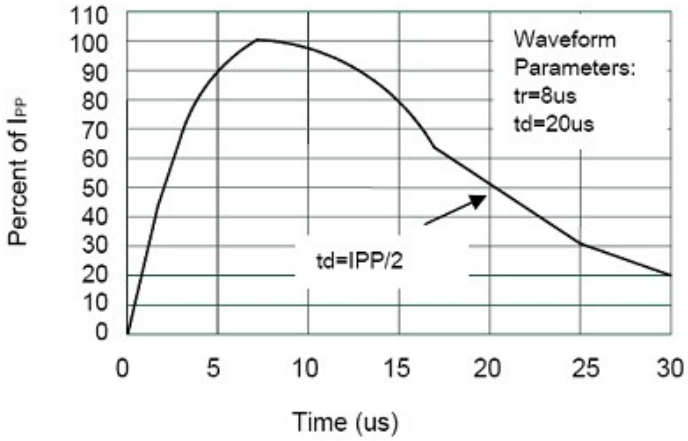
The above data are for reference only.

Electrical Characteristics (T_A=25°C unless otherwise specified)

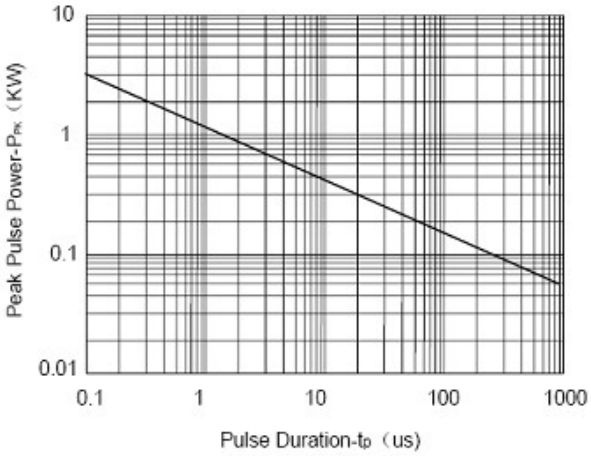
Symbol	Param	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Pin 1,2,to Pin3			24	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA Pin 1,2,to Pin3	26		32	V
I_R	Reverse Leakage Current	V_{RWM} = 24V Pin 1,2,to Pin3			1.0	μA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs Pin 1,2,to Pin3			36	V
		I_{PP} = 3A, t_p = 8/20μs Pin 1,2,to Pin3			50	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz Pin 1,2,to Pin3		13	17	pF

The above data are for reference only.

ELECTRICAL CHARACTERISTICS CURVE



Pulse Waveform

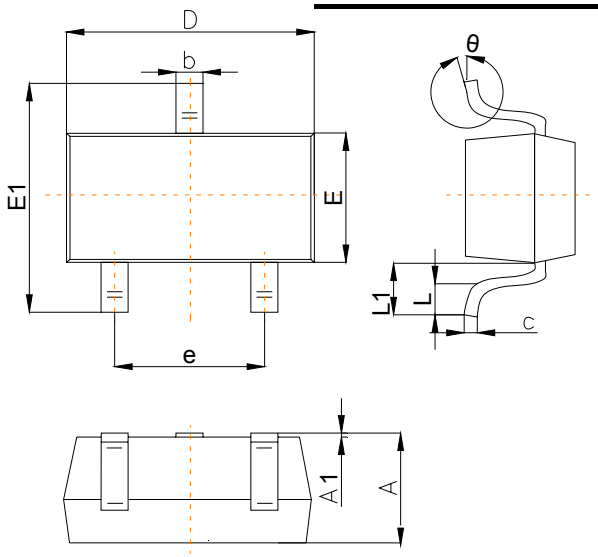


Non-Repetitive Peak Pulse Power vs. Pulse Time

The above data are for reference only.

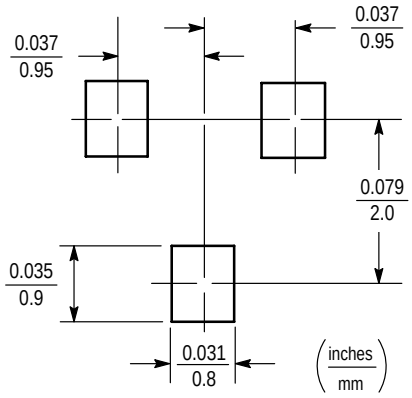
Outlitne Drawing

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	0.65		1.40
A1	0.00		0.20
b	0.30		0.55
c	0.08		0.20
D	2.70		3.10
E	1.15		1.65
E1	2.10		2.80
e	1.70		2.10
L	0.15		0.50
L1	0.35		0.70
θ	0°		12°

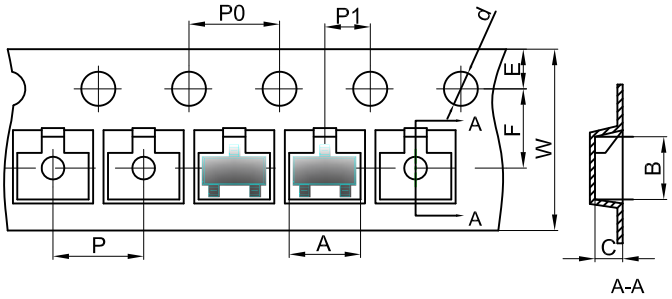
Suggested Pad Layout



Note:
1.Controlling dimension:in/millimeters.
2.General tolerance: ±0.05mm.
3.The pad layout is for reference purposes only.

SOT-23 Tape and Reel

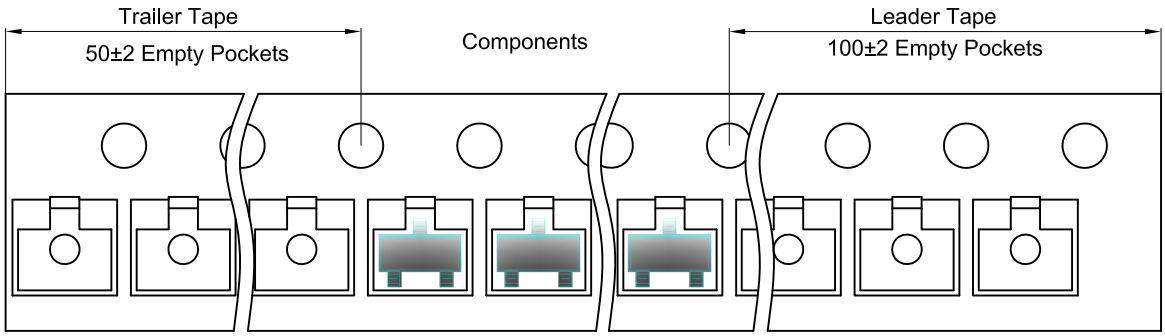
SOT-23 Embossed Carrier Tape



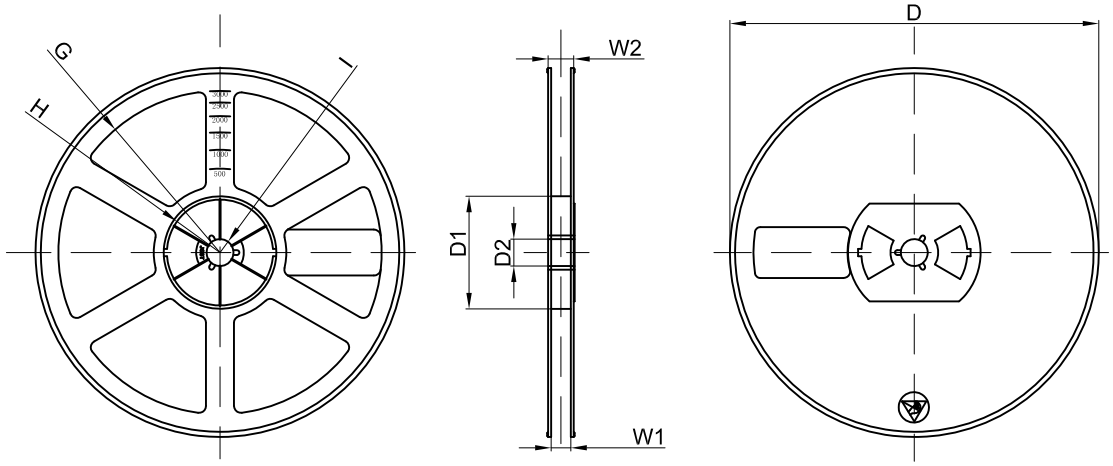
Packaging Description:
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film,adhesive laye,sealant, and anti-static sprayed agent.These reeled parts In standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 Inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	