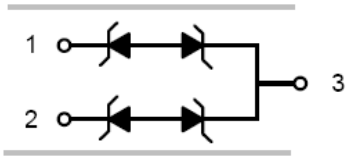
SM24CL-Q1

ESD Protection Diode

Features

- ESD / transient protection of high speed data lines
  - IEC 61000-4-2 (ESD): ±25kV (air), ±20kV (contact)
  - IEC 61000-4-4(EFT): 40A (t_p = 5/50ns)
  - IEC 61000-4-5(Lighting): 12A (t_p = 1.2/50μs)
- Protects one bidirectional line or two unidirectional lines
- 150 watts peak pulse power (t_p = 8/20μs)
- Working voltage: V_{RWM} = 24V
- Low reverse clamping voltage
- Compliant to Halogen-free
- Suffix “-Q1” for AEC-Q101

Pin Configuration



Typical Applications

- Computers and peripherals
- Portable electronics
- Industrial controls
- Set-Top Box
- Servers, Notebook, and Desktop PC

Mechanical Data

- Case: SOT-23
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208
- Marking code：24BCL

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

Parameter	Symbol	Value	Unit
IEC 61000-4-2; ESD (Air)	V_{ESD-A}	±25	kV
IEC 61000-4-2; ESD (Contact)	V_{ESD-C}	±20	kV
Peak Pulse Power (t_p = 8/20μs)	P_{PP}	150	W
Peak Pulse Current (t_p = 8/20μs)	I_{PP}	3	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Lead Solder Temperature (10 Seconds Duration)	T_L	260	°C
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	556	°C/W
Junction Temperature	T_J	-40 ~ +150	°C
Storage Temperature Range	T_{STG}	-40 ~ +150	°C

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Reverse Stand-off Voltage	V_{RWM}		-	-	24	V
Reverse Breakdown Voltage	$V_{(BR)}$	I_T = 1mA	26.7	-	32	V
Reverse Leakage Current	I_R	V_{RWM} = 24V	-	-	0.1	μA
Clamping Voltage	V_C	I_{PP} = 1A, tp = 8/20μs	-	-	35	V
		I_{PP} = 3A, tp = 8/20μs	-	-	50	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHZ (Pin 1 to 3 or Pin 2 to 3)	-	1	1.5	pF

Ratings and Characteristic Curves (@ T_A = 25°C unless otherwise specified)

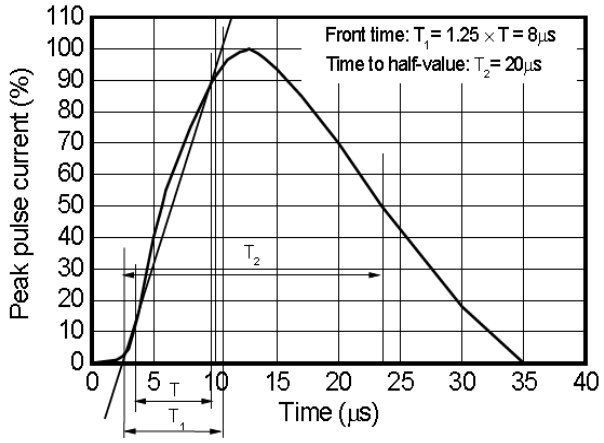


Fig 1 8/2 0μs waveform per IEC61000-4-5

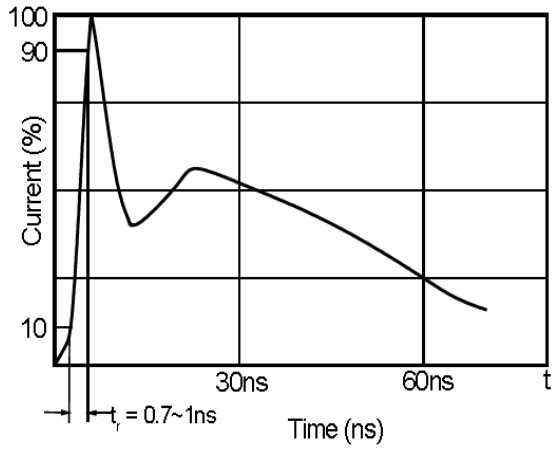


Fig 2 ESD pulse waveform according to IEC61000-4-2

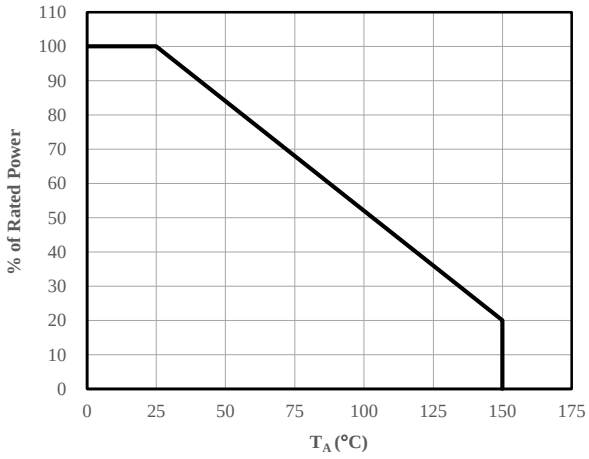


Fig 3 Power Derating Curve

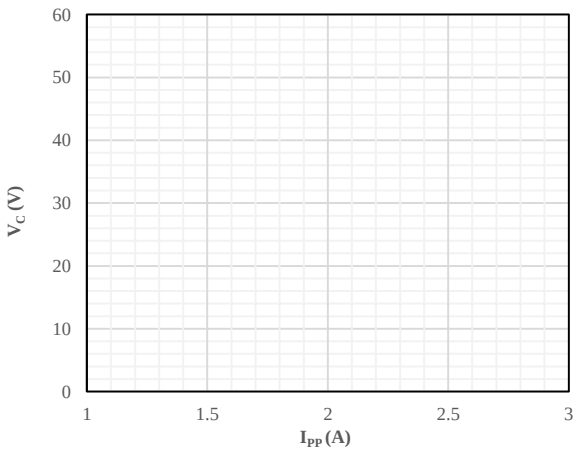
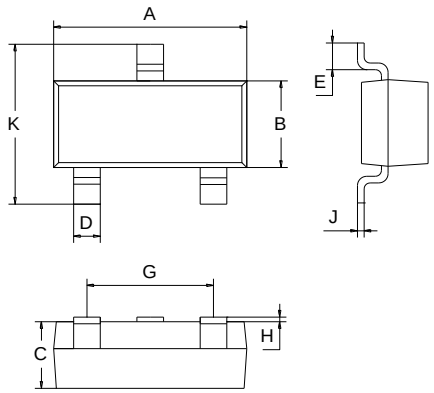


Fig 4 Clamping Voltage vs. Peak Pulse Current

Package Outline Dimensions (Unit: mm)



SOT-23		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Package Outline Dimensions (Unit: mm)

SOT-23