

Silicon NPN Epitaxial Transistor

TH415

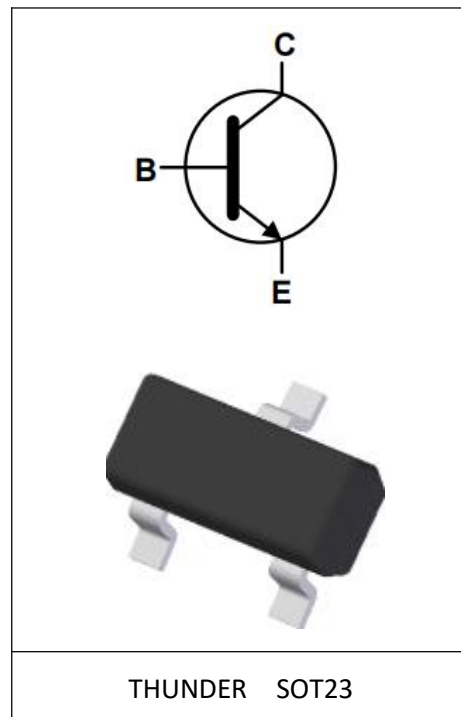
The TH415 are NPN silicon planar bipolar transistors designed for operating in avalanche mode. Tight process control and low inductance packaging combine to produce high-current pulses with fast edges.

Features

- Avalanche Transistor
- 60A Peak Avalanche Current (Pulse width = 20ns)
- $V_{CES} > 260V$ (415)
- $V_{CEO} > 100V$
- Specifically designed for Avalanche mode operation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability

Applications

- Laser Diode Drivers for Ranging and Measurement (LIDAR)
- Radar Systems
- Fast Edge Switch Generator
- High Speed Pulse Generators



Absolute Maximum Ratings ($T_a=25^{\circ}C$ unless otherwise noted):

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	260	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current(DC)	I_C	0.5	A
Collector Peak Current($t_p < 5ms$)	I_{CM}	60	A
Collector Power Dissipation	P_C	0.5	W
Junction Temperature	T_j	150	$^{\circ}C$
Storage Temperature Range	T_{STG}	- 45~150	$^{\circ}C$

Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise noted):

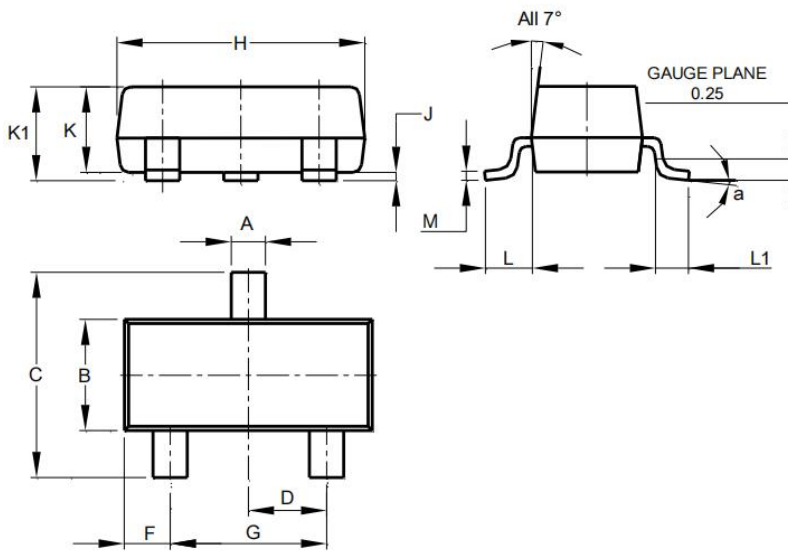
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Cut-off Current	I_{CBO}	$V_{CB}=180\text{V}, I_E=0$			0.2	μA
Collector-Emitter Cut-off Current	I_{CEO}	$V_{CE}=80\text{V}, I_B=0$			0.5	μA
Emitter-Base Cut-off Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$			0.2	μA
Collector-Base Breakdown Voltage	V_{CBO}	$I_C=0.1\text{mA}$	260			V
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C=0.1\text{mA}$	100			V
Emitter-Base Breakdown Voltage	V_{EBO}	$I_E=10\mu\text{A}$	5			V
DC Current Gain	h_{FE}	$V_{CE}=10\text{V}, I_C=10\text{mA}$	25		400	
Collector-Emitter Saturation Voltage	V_{CEsat}	$I_C=10\text{mA}, I_B=1\text{mA}$			0.5	V
Base-Emitter Saturation Voltage	V_{BEsat}	$I_C=10\text{mA}, I_B=1\text{mA}$			0.9	V
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_{CE}=0.1\text{A}$	40			Mhz

Thermal Characteristics

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	200	$^{\circ}\text{C}/\text{W}$

Package Information

SOT23 PACKAGE



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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