

SOT23 NPN SILICON PLANAR AVALANCHE TRANSISTOR

FMMT415 FMMT417

ISSUE 4 - OCTOBER 1995



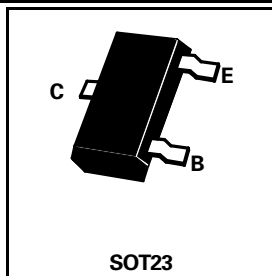
FEATURES

- * Specifically designed for Avalanche mode operation
- * 60A Peak Avalanche Current (Pulse width=20ns)

APPLICATIONS

- * Laser LED drivers
- * Fast edge generation
- * High speed pulse generators

PARTMARKING DETAIL – FMMT415 – 415
FMMT417 – 417



ABSOLUTE MAXIMUM RATINGS.

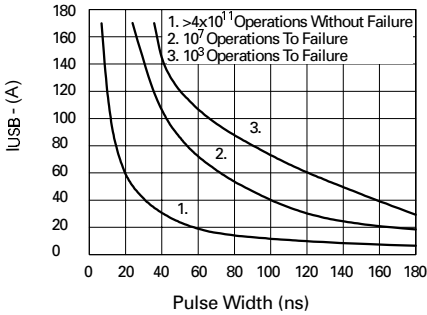
PARAMETER	SYMBOL	FMMT415	FMMT417	UNIT
Collector-Base Voltage	V_{CBO}	260	320	V
Collector-Emitter Voltage	V_{CEO}	100	100	V
Emitter-Base Voltage	V_{EBO}	6		V
Continuous Collector Current	I_C	500		mA
Peak Collector Current (Pulse Width=20ns)	I_{CM}	60		A
Power Dissipation	P_{tot}	330		mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150		°C

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ unless otherwise stated).

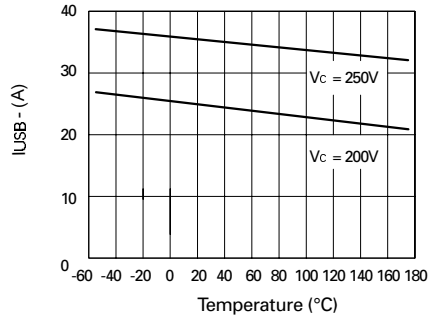
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	FMMT415 $V_{(BR)CES}$	260			V	$I_C=1\text{mA}$ $T_{amb} = -55 \text{ to } +150^\circ\text{C}$
	FMMT417	320			V	$I_C=1\text{mA}$
Collector-Emitter Breakdown Voltage	$V_{CEO(sus)}$	100			V	$I_C=100\mu\text{A}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu\text{A}$
Collector Cut-Off Current	I_{CBO}			0.1 10	μA μA	$V_{CB}=180\text{V}$ $V_{CE}=180\text{V}$ $T_{amb}=100^\circ\text{C}$
Emitter Cut-Off Current	I_{EBO}			0.1	μA	$V_{EB}=4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.5	V	$I_C=10\text{mA}$, $I_B=1\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.9	V	$I_C=10\text{mA}$, $I_B=1\text{mA}^*$
Current in Second Breakdown (Pulsed)	I_{SB}	15 25			A A	$V_C=200\text{V}$, $C_{CE}=620\text{pF}$ $V_C=250\text{V}$, $C_{CE}=620\text{pF}$
Static Forward Current Transfer Ratio	h_{FE}	25				$I_C=10\text{mA}$, $V_{CE}=10\text{V}^*$
Transition Frequency	f_T	40			MHz	$I_C=10\text{mA}$, $V_{CE}=20\text{V}$ $f=20\text{MHz}$
Collector-Base Capacitance	C_{cb}			8	pF	$V_{CB}=20\text{V}$, $I_E=0$ $f=100\text{MHz}$

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

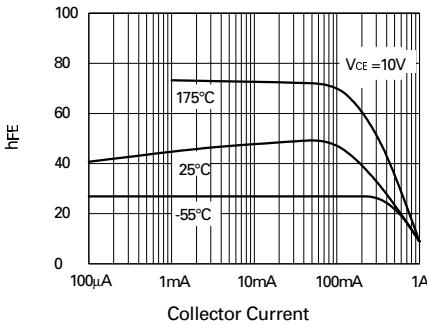
TYPICAL CHARACTERISTICS



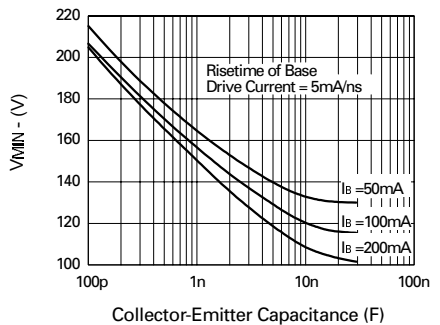
Maximum Avalanche Current v Pulse Width



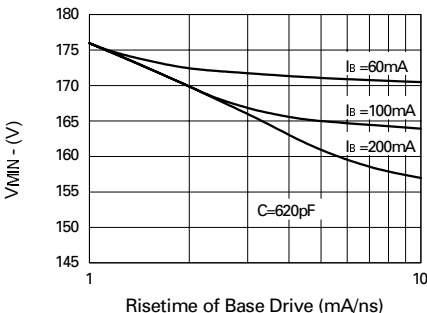
IUSB v Temperature for the specified conditions



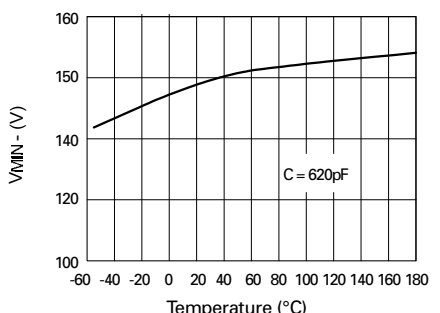
hFE v IC



Minimum starting voltage as a function of capacitance



Minimum starting voltage as a function of drive current



Minimum starting voltage as a function of temperature