

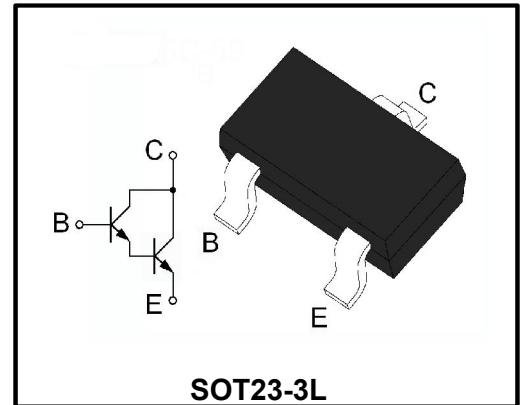
NPN Darlington Transistor

Application

- ◆ Lamp
- ◆ Relay
- ◆ Solenoid Driving

Features

- ◆ High breakdown voltage : $BV_{CEO} > 100V$
- ◆ High continuous collector current $I_C = 900mA$
- ◆ Peak pulse current $I_{CM} = 5A$
- ◆ Power dissipation 625mW
- ◆ $h_{FE} > 5k$ up to 2A for high current gain hold up
- ◆ Complementary PNP Type:FMMT734



SOT23-3L

Marking: 634

Absolute Maximum Ratings ($T_a = 25^\circ C$, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Collector-base voltage	BV_{CBO}	120	V
Collector-emitter voltage	BV_{CEO}	100	V
Emitter-base voltage	BV_{EBO}	12	V
Collector current	I_C	900	mA
Peak pulse current	I_{CM}	5	A
Power dissipation	P_D	625	mW
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55 ~ +150	$^\circ C$

Thermal Characteristics ($T_a = 25^\circ C$, unless otherwise specified.)

Parameter	Symbol	Conditions	Value	Unit
Junction to ambient	$R_{\theta JA}$	In air, 25mm ² FR4 PCB	200	$^\circ C/W$
Junction to ambient	$R_{\theta JA}$	Same as above, t = 5s	155	$^\circ C/W$
Junction to leads	$R_{\theta JL}$	junction to solder point	194	$^\circ C/W$

Electrical Characteristics (Ta=25°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	BV_{CBO}	$I_C = 100\mu A, I_E = 0$	120			V
Collector-emitter breakdown voltage *	BV_{CEO}	$I_C = 10mA, I_B = 0$	100			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 100\mu A, I_C = 0$	12			V
Collector cut-off current	I_{CBO}	$V_{CB} = 80V, I_E = 0$			10	nA
Collector emitter cutoff current	I_{CES}	$V_{CES} = 80V$			100	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = 7V, I_C = 0$			10	nA
DC current gain *	h_{FE}	$V_{CE} = 5V, I_C = 10mA$ $V_{CE} = 5V, I_C = 100mA$ $V_{CE} = 5V, I_C = 1A$ $V_{CE} = 5V, I_C = 2A$ $V_{CE} = 2V, I_C = 1A$ $V_{CE} = 5V, I_C = 5A$	20k 15k 5k	50k 60k 40k 14k 24k 600		
Collector-emitter saturation voltage *	$V_{CE(sat)}$	$I_C = 100mA, I_B = 1mA$ $I_C = 250mA, I_B = 1mA$ $I_C = 500mA, I_B = 5mA$ $I_C = 900mA, I_B = 5mA$ $I_C = 1A, I_B = 5mA$		0.67 0.72 0.75 0.82 0.85	0.75 0.80 0.85 0.93 0.96	V
Base -emitter saturation voltage *	$V_{BE(sat)}$	$I_C = 1A, I_B = 5mA$			1.65	V
Base -emitter on voltage *	$V_{BE(on)}$	$V_{CE} = 5V, I_C = 1A$			1.50	V
Current gain - bandwidth product	f_T	$V_{CE} = 10V, I_C = 50mA$ $f = 100 MHz$		140		MHz
Output capacitance	C_{ob}	$V_{CB} = 10 V, f = 1.0MHz$			20	pF
Turn-on time	t_{on}	$V_{CC} = 20V, I_C = 50mA$ $I_{B1} = - I_{B2} = 1mA$		290		ns
Turn-off time	t_{off}			2400		ns

* Measured under pulsed conditions. Pulse width 300μs. Duty cycle 2%

Typical Characteristics

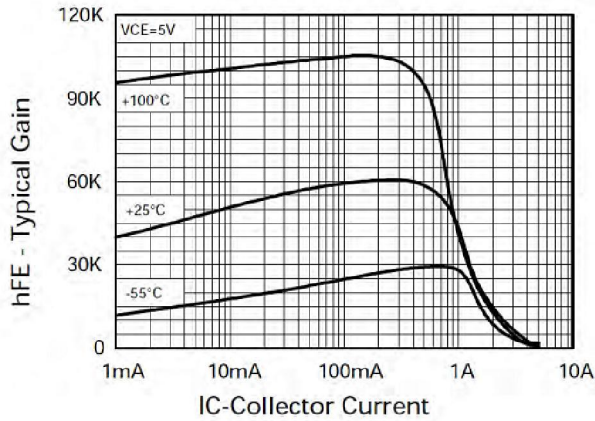


Figure 1. DC current Gain

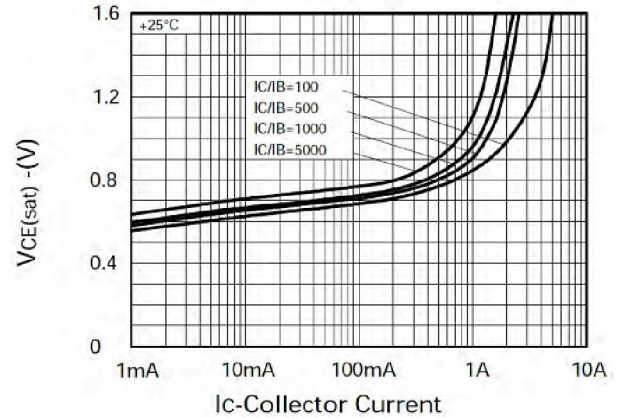


Figure 2. Collector-Emitter Saturation Voltage

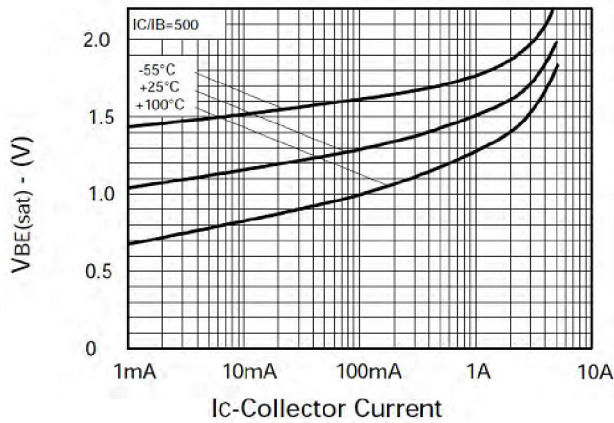


Figure 3. Base-Emitter Saturation Voltage

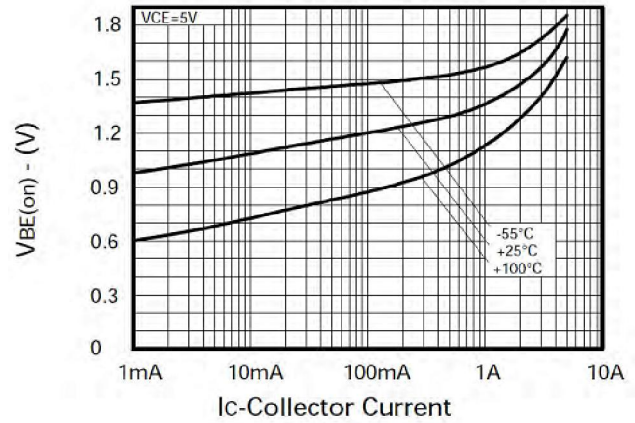


Figure 4. Base-Emitter on Voltage

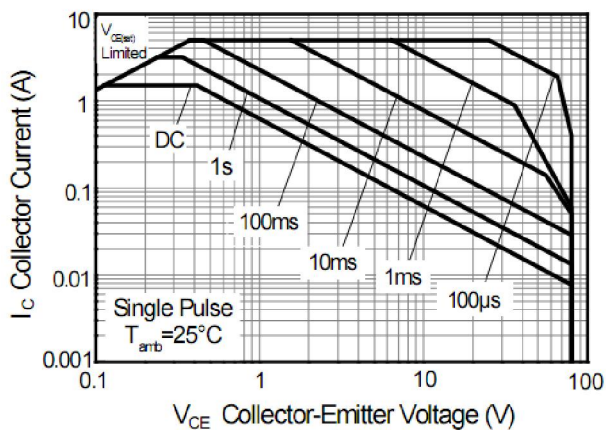


Figure 5. Safe Operating Area

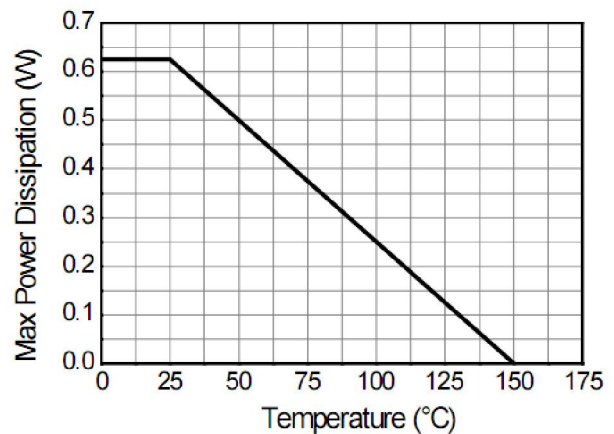
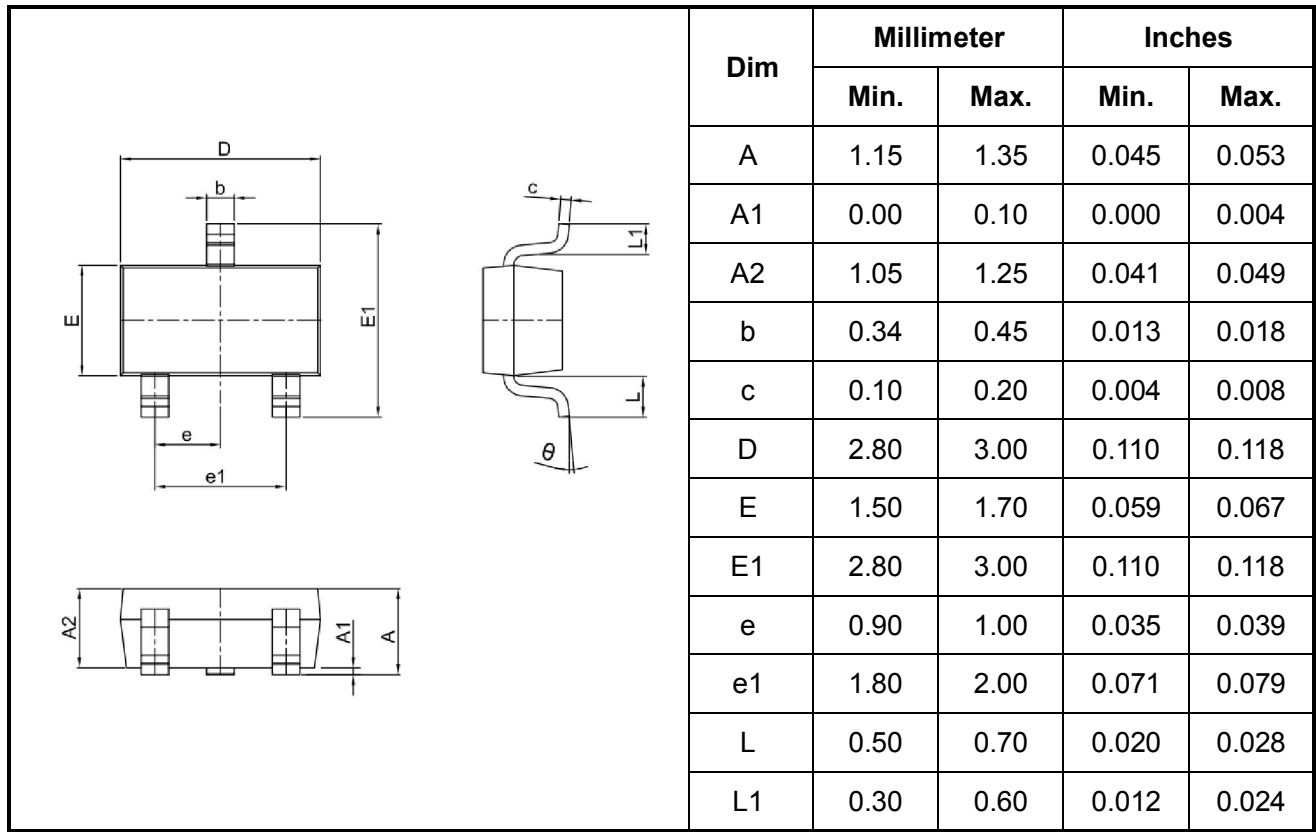


Figure 6. Derating Curve

Package Outline

SOT23-3L



Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT23-3L	Tape/Reel, 7" reel	3000	EIA-481-1