

40V; 2A NPN Low $V_{CE(sat)}$ (BISS) Transistor

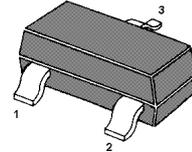
FEATURES

- Low collector-emitter saturation voltage
- High current capability
- Improved device reliability due to reduced heat generation.

APPLICATIONS

- Supply line switching circuits
- Battery management applications
- DC/DC converter applications
- Strobe flash units
- Heavy duty battery powered equipment (motor and lamp drivers).

SOT-23



1.Base 2.Emitter 3.Collector

Absolute Maximum Ratings ($T_a = 25\text{ }^\circ\text{C}$)

		Symbol	Value	Unit
Collector Base Voltage		V_{CBO}	40	V
Collector Emitter Voltage		V_{CEO}	40	V
Emitter Base Voltage		V_{EBO}	5	V
Collector Current (DC)		I_C	2	A
Peak Collector Current		I_{CM}	3	A
Peak Base Current		I_{BM}	300	mA
Total Power Dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ¹⁾	P_{tot}	200	mW
	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ²⁾		480	
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature Range		T_S	-65 to +150	$^\circ\text{C}$
Thermal Resistance From Junction to Ambient	In free air ¹⁾	R_{thj-a}	417	K/W
	In free air ²⁾		260	
Operating Ambient Temperature		T_{amb}	-65 to +150	$^\circ\text{C}$

¹⁾ Device mounted on a printed-circuit board; single sided copper; tinplated and standard footprint.

²⁾ Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1cm².

Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at $V_{CE}=2\text{V}$, $I_C=100\text{mA}$	h_{FE}	350	-	-	-
at $V_{CE}=2\text{V}$, $I_C=500\text{mA}$	h_{FE}	300	-	-	-
at $V_{CE}=2\text{V}$, $I_C=1\text{A}$	h_{FE}	250	-	-	-
at $V_{CE}=2\text{V}$, $I_C=2\text{A}$	h_{FE}	80	-	-	-
Collector-Base Cutoff Current					
at $V_{CB}=30\text{V}$	I_{CBO}	-	-	100	nA
at $V_{CB}=30\text{V}$, $T_{amb}=150\text{ }^{\circ}\text{C}$		-	-	50	μA
Emitter-Base Cutoff Current					
at $V_{EB}=4\text{V}$	I_{EBO}	-	-	100	nA
Collector-Emitter Saturation Voltage					
at $I_C=100\text{mA}$, $I_B=1\text{mA}$	$V_{CE(sat)}$	-	-	70	mV
at $I_C=500\text{mA}$, $I_B=50\text{mA}$		-	-	100	
at $I_C=750\text{mA}$, $I_B=15\text{mA}$		-	-	180	
at $I_C=1\text{A}$, $I_B=50\text{mA}$		-	-	180	
at $I_C=2\text{A}$, $I_B=200\text{mA}$		-	-	320	
Equivalent on-Resistance					
at $I_C=500\text{mA}$, $I_B=50\text{mA}$	$R_{CE(sat)}$	-	140	<200	$\text{m}\Omega$
Base-Emitter Saturation Voltage					
at $I_C=2\text{A}$, $I_B=200\text{mA}$	$V_{BE(sat)}$	-	-	1.1	V
Base-Emitter Turn-on Voltage					
at $V_{CE}=2\text{V}$, $I_C=100\text{mA}$	$V_{BE(on)}$	-	-	0.75	V
Transition Frequency					
at $V_{CE}=10\text{V}$, $I_C=100\text{mA}$, $f=100\text{MHz}$	f_T	100	230	-	MHz
Collector Capacitance					
at $V_{CB}=10\text{V}$, $f=1\text{MHz}$	C_C	-	15	20	pF