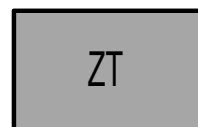


FEATURES

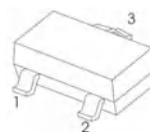
- Low collector-emitter saturation voltage
- High current capabilities
- Improved device reliability due to reduced heat generation.

APPLICATIONS

- General purpose switching and muting
- LCD backlighting
- Supply line switching circuits
- Battery driven equipment (mobile phones, video cameras and hand-held devices).



SOT-23



1.BASE
2.EMITTER
3.COLLECTOR

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

Parameter		Symbol	Value	Unit
Collector Base Voltage		V_{CBO}	40	V
Collector Emitter Voltage		V_{CEO}	30	V
Emitter Base Voltage		V_{EBO}	5	V
Collector Current (DC)		I_C	1	A
Peak Collector Current		I_{CM}	2	A
Peak Base Current		I_{BM}	1	A
Total Power Dissipation	$T_{amb} \leq 25^\circ\text{C}^{1)}$	P_{tot}	200	mW
	$T_{amb} \leq 25^\circ\text{C}^{2)}$		450	
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⁾	$R_{th\ j-a}$	417	K/W
	In free air ²⁾		278	
Operating Ambient Temperature		T_{amb}	-65 to +150	$^\circ\text{C}$

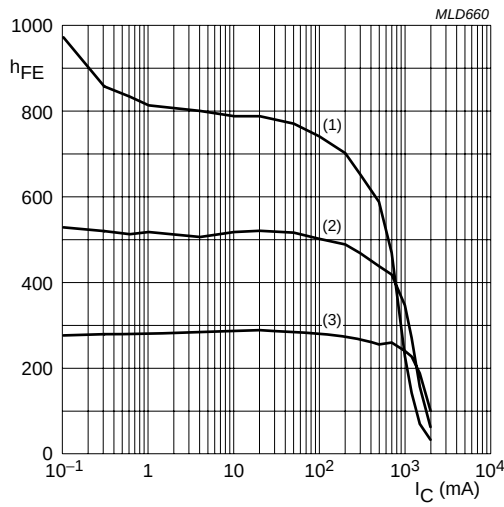
¹⁾ Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.

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

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at V _{CE} =5V, I _C =1mA	h _{FE}	300	-	-	
at V _{CE} =5V, I _C =500mA	h _{FE}	300	-	900	
at V _{CE} =5V, I _C =1A	h _{FE}	200	-	-	
Collector-Base Cutoff Current					
at V _{CB} =40V	I _{CBO}	-	-	100	nA
at V _{CB} =40V, T _{amb} =150 °C	I _{CBO}	-	-	50	μA
Collector-Emitter Cutoff Current					
at V _{CE} =30V	I _{CEO}	-	-	100	nA
Emitter-Base Cutoff Current					
at V _{EB} =5V	I _{EBO}	-	-	100	nA
Collector-Emitter Saturation Voltage					
at I _C =100mA, I _B =1mA	V _{CE(sat)}	-	-	200	mV
at I _C =500mA, I _B =50mA	V _{CE(sat)}	-	-	250	
at I _C =1A, I _B =100mA	V _{CE(sat)}	-	-	500	
Base-Emitter Saturation Voltage					
at I _C =1A, I _B =100mA	V _{BE(sat)}	-	-	1.2	V
Base-Emitter Turn-on Voltage					
at V _{CE} =5V, I _C =1A	V _{BE(on)}	-	-	1.1	V
Transition Frequency					
at V _{CE} =10V, I _C =50mA, f=100MHz	f _T	150	-	-	HMz
Collector Capacitance					
at V _{CB} =10V, f=1MHz	C _C	-	-	10	pF

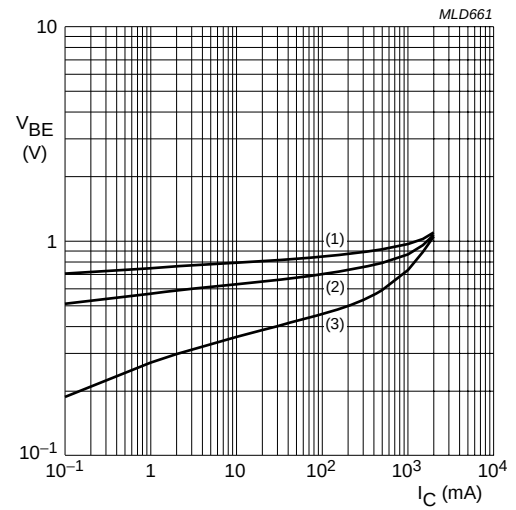
RATING AND CHARACTERISTIC CURVES



$V_{CE} = 5\text{ V}$.

- (1) $T_{amb} = 150^\circ\text{C}$.
- (2) $T_{amb} = 25^\circ\text{C}$.
- (3) $T_{amb} = -55^\circ\text{C}$.

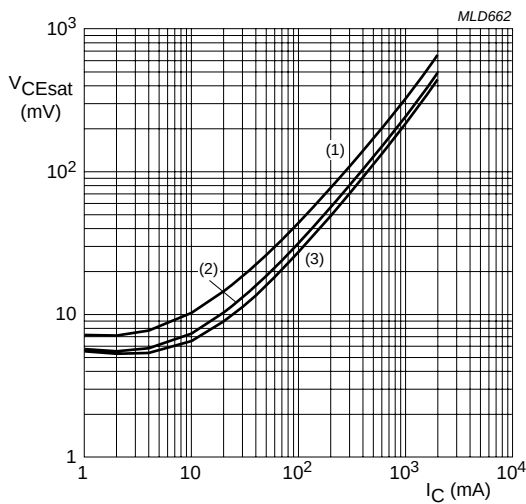
DC current gain as a function of collector current; typical values.



$V_{CE} = 5\text{ V}$.

- (1) $T_{amb} = -55^\circ\text{C}$.
- (2) $T_{amb} = 25^\circ\text{C}$.
- (3) $T_{amb} = 150^\circ\text{C}$.

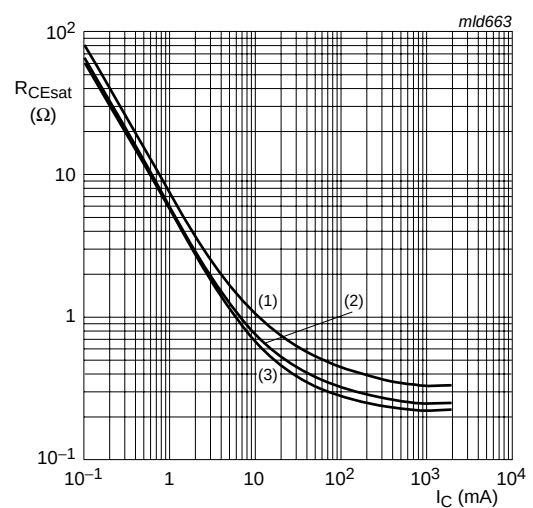
Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 10$.

- (1) $T_{amb} = 150^\circ\text{C}$.
- (2) $T_{amb} = 25^\circ\text{C}$.
- (3) $T_{amb} = -55^\circ\text{C}$.

Collector-emitter saturation voltage as a function of collector current; typical values.



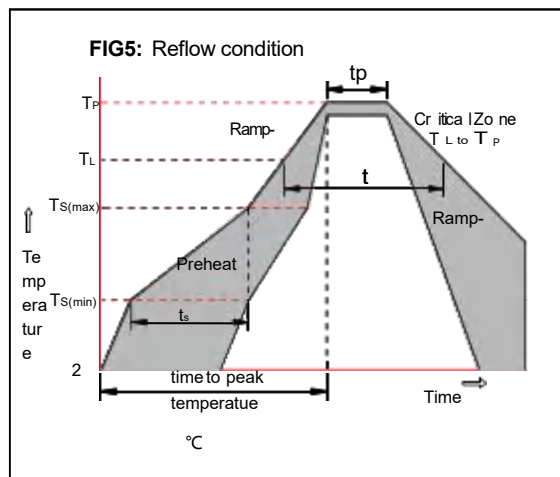
$I_C/I_B = 10$.

- (1) $T_{amb} = 150^\circ\text{C}$.
- (2) $T_{amb} = 25^\circ\text{C}$.
- (3) $T_{amb} = -55^\circ\text{C}$.

Equivalent on-resistance as a function of collector current; typical values.

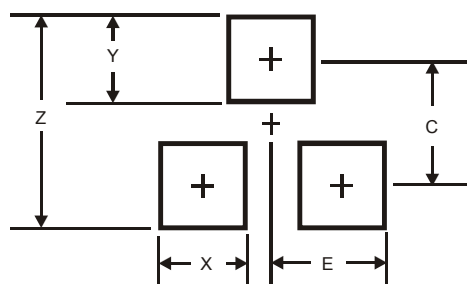
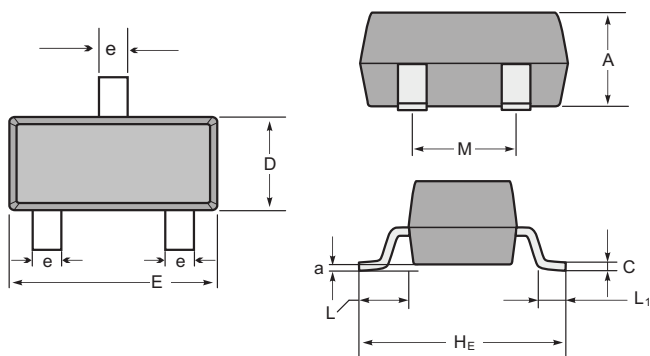
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

SOT23



SOT-23 mechanical data

UNIT	A	C	D	E	H _E	e	M	L	L ₁	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7		0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)
	min	35	3	47	110	87	12	67		6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape & reel specification

Tape	Symbol	Dimension (mm)
	P0	4.00±0.10
	P1	4.00±0.10
	P2	2.00±0.10
	D0	1.55±0.10
	D1	1.05±0.10
	E	1.55±0.10
	F	3.60±0.10
	W	8.00±0.10
	A0	3.80±0.20
	B0	3.25±0.20
	K0	1.45±0.10
	T	0.25±0.05
	D2	178.0±3.0
	D3	55Min.
7" Reel	D4	R24.0±3.0
	G	R82.0±3.0
	I	13.0±2.0
	W1	11.0±3.0
	Quantity: 3000PCS	

