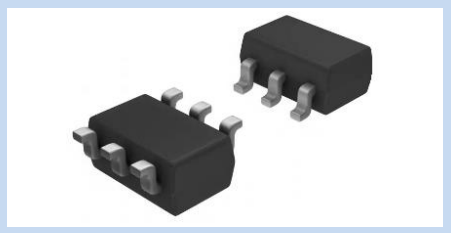
NPN Transistor AEC-Q101
40V 0.2A 0.225W SOT-363

DMMT3904W-A

MERITEK

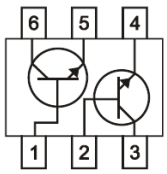
FEATURE

- Matched Pair NPN Epitaxial Silicon, Planar Design
- Collector-Emitter Voltage V_{CE}=40V
- Collector Current I_C=200mA
- AEC-Q101 Qualified



MECHANICAL DATA

- Case: SOT-363, Molded Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026



RoHS

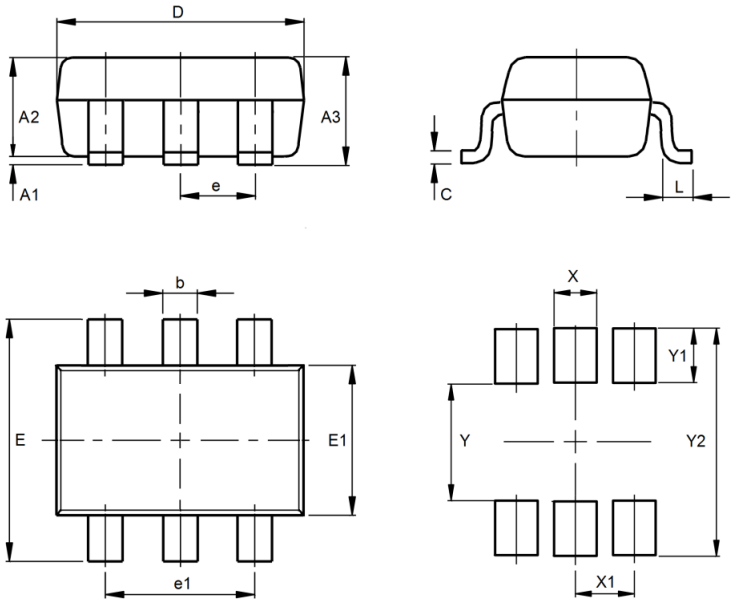
MAXIMUM RATINGS (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current-Continuous	I_C	200	mA
Power Dissipation	P_D	225	mW
Typical Thermal Resistance	$R_{\theta JA}$	625	°C/W
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 ~ 150	°C

Notes:
1. Built with adjacent die from a single wafer.
2. Mounted on a FR4 PCB, 70 x 60 x 1mm.

DIMENSIONS AND RECOMMENDED LAND PATTERN

Item	Min (mm)	Max (mm)
A1	-	0.10
A2	0.80	1.00
A3	-	1.10
b	0.15	0.30
C	0.08	0.25
D	1.90	2.20
e	0.55	0.75
e1	1.20	1.40
E	2.00	2.20
E1	1.15	1.35
L	0.15	0.45
Y	1.18	
Y1	0.66	
Y2	2.50	
X	0.45	
X1	0.65	



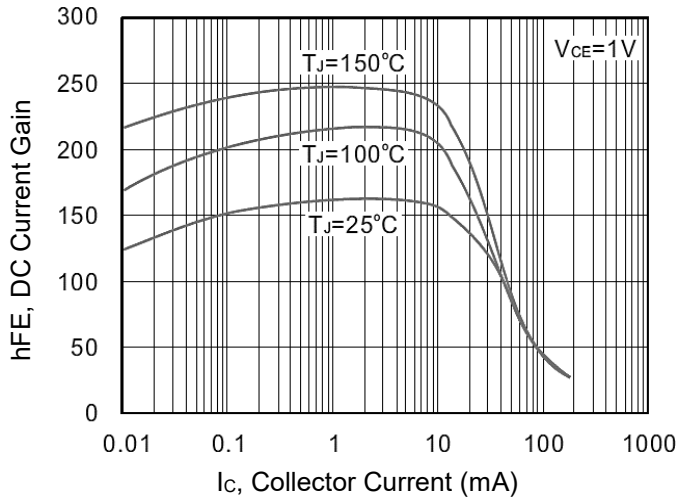
ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Max.	Unit
Collector-Base Breakdown Voltage	I_C=10μA, I_E=0	$V_{(BR)CBO}$	60	-	V
Collector-Emitter Breakdown Voltage	I_C=1.0mA, I_B=0	$V_{(BR)CEO}$	40	-	V
Emitter-Base Breakdown Voltage	I_E=10μA, I_C=0	$V_{(BR)EBO}$	6.0	-	V
Base Cut-Off Current	V_{CE}=30V, V_{EB}=3.0V	I_{BL}	-	50	nA
Collector Cut-Off Current	V_{CE}=30V, V_{EB}=3.0V	I_{CEX}	-	50	nA
DC Current Gain	V_{CE} =1.0V, I_C=0.1mA	h_{FE}	40	-	-
	V_{CE} =1.0V, I_C=1.0mA		70	-	
	V_{CE} =1.0V, I_C=10mA		100	300	
	V_{CE} =1.0V, I_C=50mA		60	-	
	V_{CE}=1.0V, I_C=100mA		30	-	
Collector-Emitter Saturation Voltage	I_C=10mA, I_B=1.0mA	V_{CE}(sat)	-	0.2	V
	I_C=50mA, I_B=5.0mA			0.3	
Base-Emitter Saturation Voltage	I_C=10mA, I_B=1.0mA	V_{BE}(sat)	0.65	0.85	V
	I_C=50mA, I_B=5.0mA		-	0.95	
Base-Emitter Voltage Matching	V_{CE} =5V, I_C=2mA	ΔV_{BE}	-	1	mV
Output Capacitance	V_{CB} =5.0V, I_E=0, f=1.0 MHz	C_{obo}	-	4.0	pF
Input Capacitance	V_{BE}=0.5V, I_C=0, f=1.0 MHz	C_{ibo}	-	8.0	pF
Input Impedance	V_{CE} =10V, I_C=0mA, f=1.0 kHz	h_{ie}	1.0	10	kΩ
Voltage Feedback Ratio		h_{re}	0.5	8.0	$\times 10^{-4}$
Small–Signal Current Gain		h_{fe}	100	400	-
Output Admittance		h_{oe}	1.0	40	μs
Current–Gain — Bandwidth Product	V_{CE} =20V, I_C=10mA, f=100 MHz	f_T	300	-	MHz
Noise Figure	V_{CE} =5.0V, I_C=100μA, R_S=1.0kΩ, f=1.0 kHz	N_F	-	5.0	dB
Delay Time	V_{CC} =3.0V, V_{BE}=0.5V I_C =10mA, I_{B1}=1.0mA	t_d	-	35	nS
Rise Time		t_r	-	35	nS
Storage Time	V_{CC} =3.0V, I_C=10mA I_{B1}=I_{B2}=1.0mA	t_s	-	200	nS
Fall Time		t_f	-	50	nS

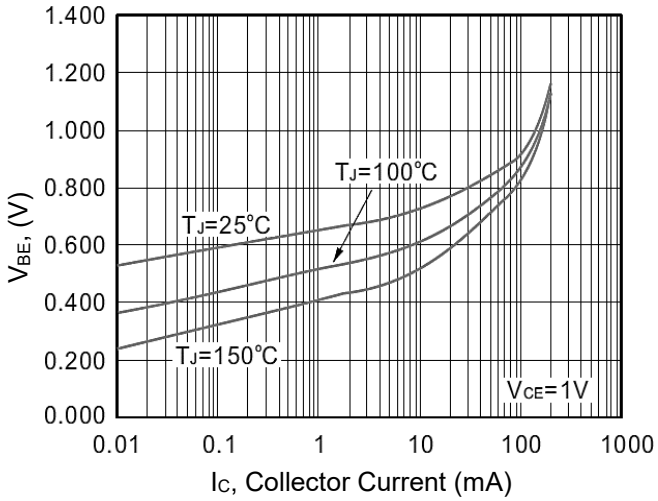
Note: Pulse Test: Pulse Width <300 μs, Duty Cycle <2.0%.

CHARACTERISTIC CURVES

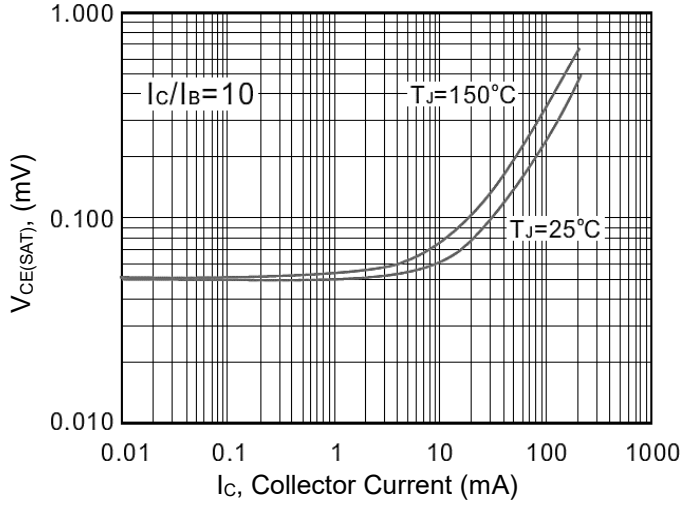
Typical h_{FE} vs I_C



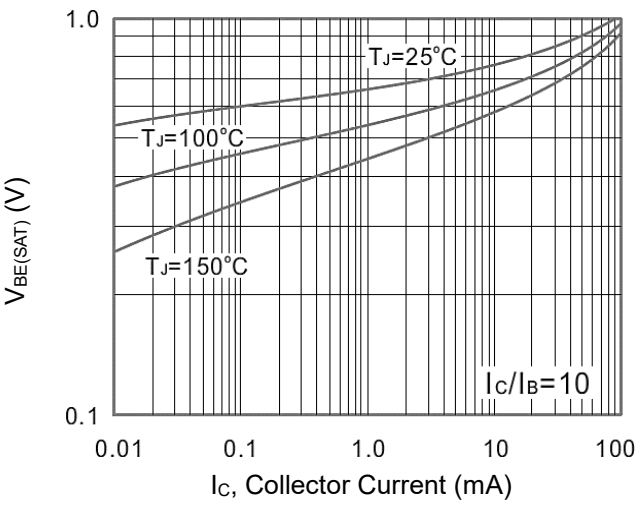
Typical V_{BE} vs Collector Current



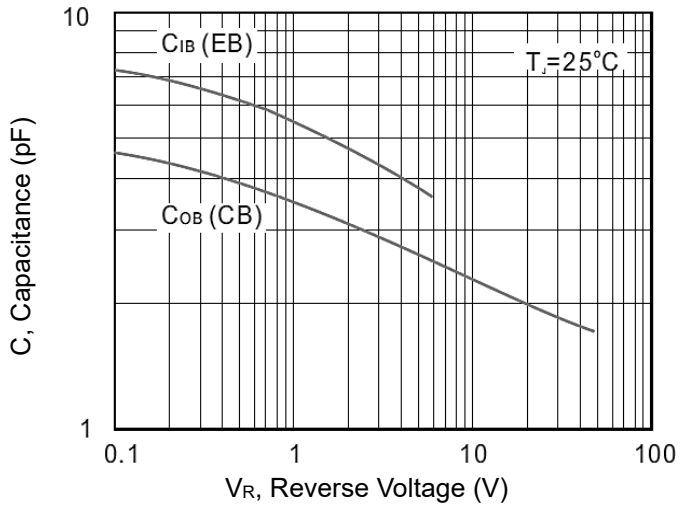
Typical $V_{CE(SAT)}$ vs I_C



Typical $V_{BE(SAT)}$ vs Collector Current



Typical Capacitance vs Reverse Voltage



*Specifications subject to change without notice.