



DMMT3904W

MATCHED NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

VOLTAGE 40 Volts **POWER** 200 mWatts

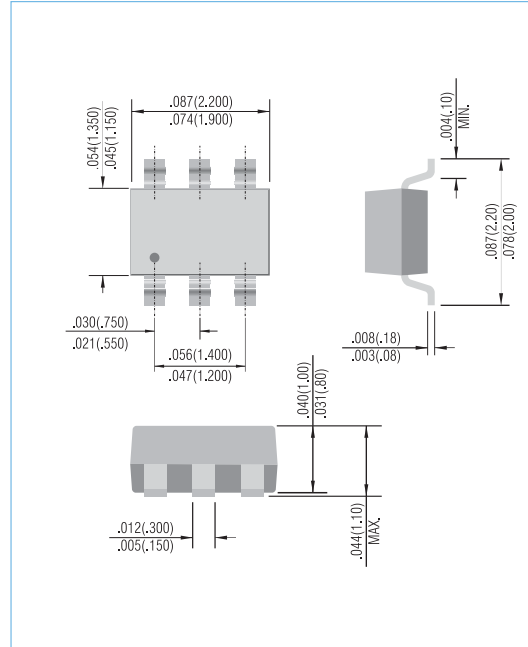
SOT-363 Unit: inch (mm)

FEATURES

- NPN epitaxial silicon, planar design
- Collector-emitter voltage $V_{CE} = 40V$
- Collector current $I_C = 200mA$
- In compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

- Case: SOT-363, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.008 gram
- Marking: S4A



ABSOLUTE RATINGS

PARAMETER	Symbol	Value	Units
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 (Note2)	P_{tot}	200	mW
Thermal Resistance , Junction to Ambient (Note2)	$R_{\theta JA}$	625	$^{\circ}C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

Note 1: Built with adjacent die from a single wafer.

2: Device mounted on FR5 PCB: 1.0x0.75x0.62 in.

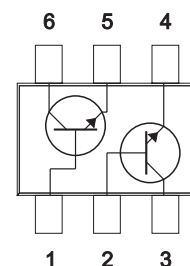


Fig.108



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ELECTRICAL CHARACTERISTICS

PARAMETER	Symbol	Test Condition	MIN.	MAX.	Units
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	60	-	V
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1.0mA, I_B=0$	40	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6.0	-	V
Collector Cutoff Current	I_{CEX}	$V_{CE}=30V, V_{EB(off)}=3.0V$	-	50	nA
Base Cutoff Current	I_{BI}	$V_{CE}=30V, V_{EB(off)}=3.0V$	-	50	nA
DC Current Gain	h_{FE}	$I_C=0.1mA, V_{CE}=1.0V$	40	-	-
		$I_C=1.0mA, V_{CE}=1.0V$	70	-	
		$I_C=10mA, V_{CE}=1.0V$	100	300	
		$I_C=50mA, V_{CE}=1.0V$	60	-	
		$I_C=100mA, V_{CE}=1.0V$	30	-	
Collector - Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=10mA, I_B=1.0mA$ $I_C=50mA, I_B=5.0mA$	-	0.2 0.3	V
Base - Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=10mA, I_B=1.0mA$ $I_C=50mA, I_B=5.0mA$	0.65 -	0.85 0.95	V
Base - Emitter Voltage Matching	ΔV_{BE}	$V_{CE}=5V, I_C=2mA$	-	1	mV
Output Capacitance	C_{OBO}	$V_{CB}=5V, I_E=0, f=1MHz$	-	4.0	pF
Input Capacitance	C_{IBO}	$V_{CB}=0.5V, I_C=0, f=1MHz$	-	8.0	pF
Input Impedance	h_{ie}	$V_{CE}=10V, I_C=0mA, f=1.0KHz$	1.0	10	k Ω
Voltage Feedback Ratio	h_{fe}		0.5	8	$\times 10^{-4}$
Small Signal Current Gain	h_{fe}		100	400	-
Output Admittance	h_{oe}		1.0	40	μs
Current Gain-Bandwidth Product	ft		$V_{CE}=20V, I_C=10mA, f=100MHz$	300	-
Noise Figure	NF	$V_{CE}=5.0V,$ $I_C=100\mu A, RS=1.0k\Omega, f=1.0KHz$	-	5.0	dB
Delay Time	td	$V_{CC}=3V, V_{BE}=-0.5V,$ $I_C=10mA, I_B=1.0mA$	-	35	ns
Rise Time	tr	$V_{CC}=3V, V_{BE(off)}=-0.5V,$ $I_C=10mA, I_B=1.0mA$	-	35	ns
Storage Time	ts	$V_{CC}=3V, I_C=10mA$ $I_{B1}=I_{B2}=1.0mA$	-	200	ns
Fall Time	tf	$V_{CC}=3V, I_C=10mA$ $I_{B1}=I_{B2}=1.0mA$	-	50	ns

Note 2: Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.



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ELECTRICAL CHARACTERISTICS CURVE

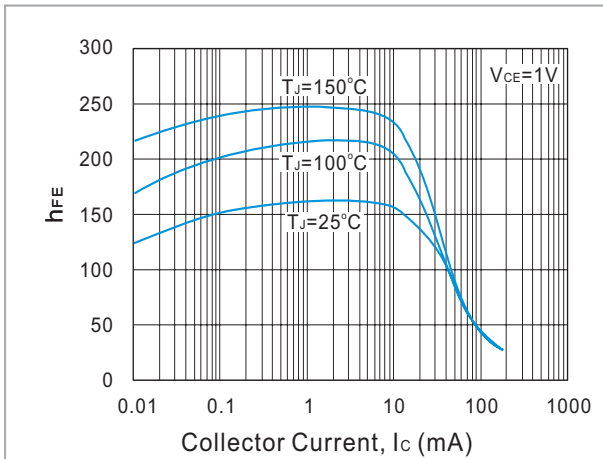


Fig. 1. Typical h_{FE} vs. Collector Current

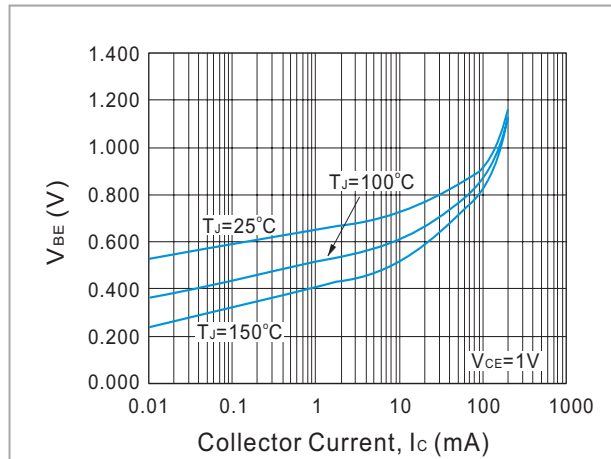


Fig. 2. Typical V_{BE} vs. Collector Current

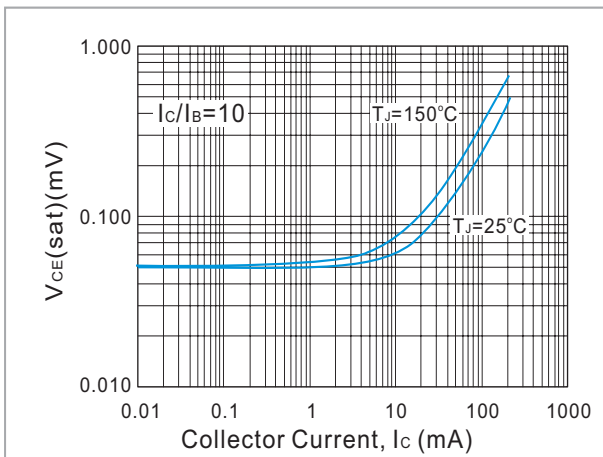


Fig. 3. Typical $V_{CE(sat)}$ vs. Collector Current

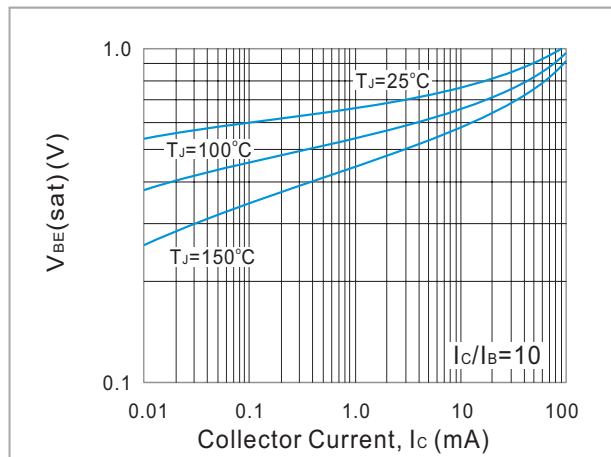


Fig. 4. Typical $V_{BE(sat)}$ vs Collector Current

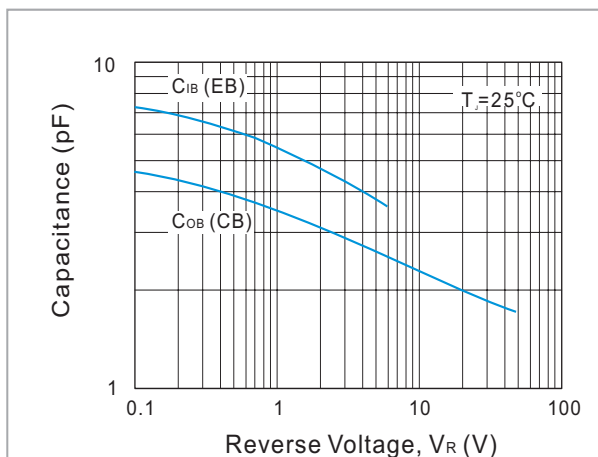
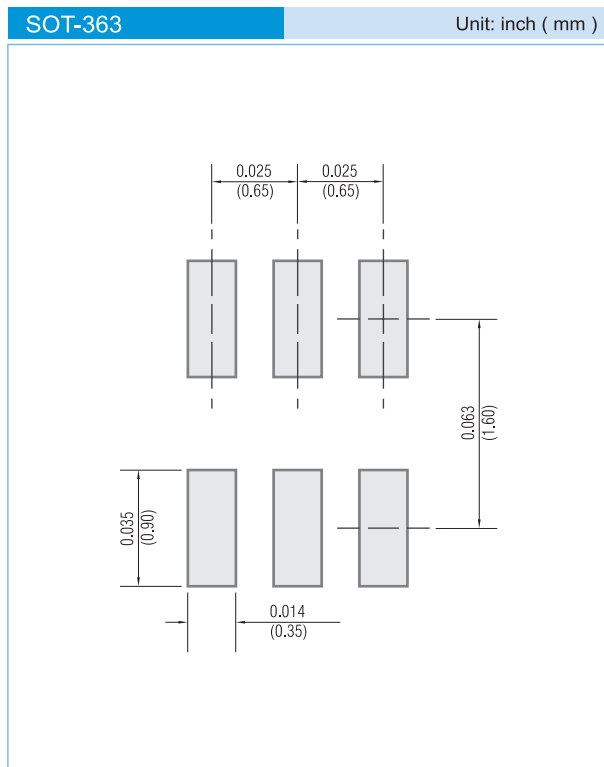


Fig. 5. Typical Capacitances vs. Reverse Voltage



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MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information
 - T/R - 10K per 13" plastic Reel
 - T/R - 3K per 7" plastic Reel

LEGAL STATEMENT

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