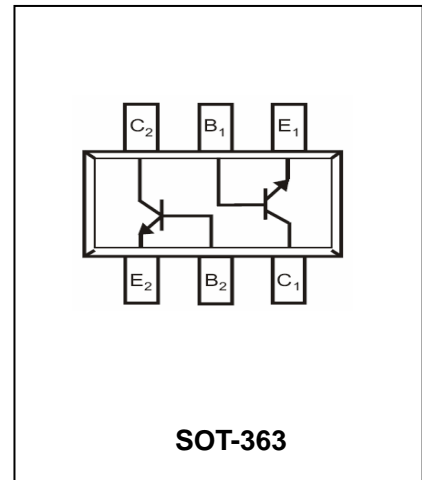


Dual NPN Small Signal Surface Mount Transistor

MMDT3904

FEATURES

- Epitaxial planar die construction.
- Ideal for low power amplification and switching.
- Ultra-small surface mount package
- Also available in lead free version.



APPLICATIONS

- General switching and amplification

ORDERING INFORMATION

Type No.	Marking	Package Code
MMDT3904	K6N	SOT-23

MAXIMUM RATING @ Ta=25°C unless otherwise specified

SYMBOL	PARAMETER	VALUE	UNIT
V _{CBO}	collector-base voltage	60	V
V _{CEO}	collector-emitter voltage	40	V
V _{EBO}	emitter-base voltage	5	V
I _C	collector current -continuous	0.2	A
P _{tot}	total power dissipation	0.2	W
T _{stg}	storage temperature	150	°C
T _j	junction temperature	-55-150	°C

Dual NPN Small Signal Surface Mount Transistor **MMDT3904**

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=10\mu A, I_E=0$	60		V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=1mA, I_B=0$	40		V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=10\mu A, I_C=0$	5		V
I_{CBO}	collector cut-off current	$I_E = 0, V_{CB} = 30V$	-	0.05	μA
I_{EBO}	emitter cut-off current	$I_C = 0, V_{EB} = 5V$	-	0.05	μA
h_{FE}	DC current gain	$V_{CE} = 1V, I_C = 0.1mA$	40	-	
		$V_{CE} = 1V, I_C = 1mA$	70	-	
		$V_{CE} = 1V, I_C = 10mA$	100	300	
		$V_{CE} = 1V, I_C = 50mA$	60	-	
		$V_{CE} = 1V, I_C = 100mA$	30	-	
$V_{CE(sat)}$	collector-emitter saturation voltage	$I_C = 10mA, I_B = mA$	-	200	mV
		$I_C = 50mA, I_B = 5mA$	-	300	mV
$V_{BE(sat)}$	base-emitter saturation voltage	$I_C = 10mA, I_B = 1mA$	650	850	mV
		$I_C = 50mA, I_B = 5mA$	-	950	mV
C_{ob}	Output capacitance	$I_E = 0, V_{CB} = 5V; f = 1MHz$	-	4	pF
f_T	transition frequency	$I_C=10mA, V_{CE}=20V, f=100MHz$	300	-	MHz
NF	noise figure	$I_C=0.1mA, V_{CE} = 5V, R_S=1k\Omega, f = 1kHz$	-	5	dB
Switching times (between 10% and 90% levels);					
t_d	delay time	$V_{CC}=3V, V_{BE(off)}=-0.5V$	-	35	ns
t_r	rise time	$I_C=10mA, I_{B1}=I_{B2}=1mA$	-	35	ns
t_s	storage time	$V_{CC}=3V, I_C=10mA$	-	200	ns
t_f	fall time	$I_{B1}=I_{B2}=1mA$	-	50	ns

Dual NPN Small Signal Surface Mount Transistor

MMDT3904

TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified

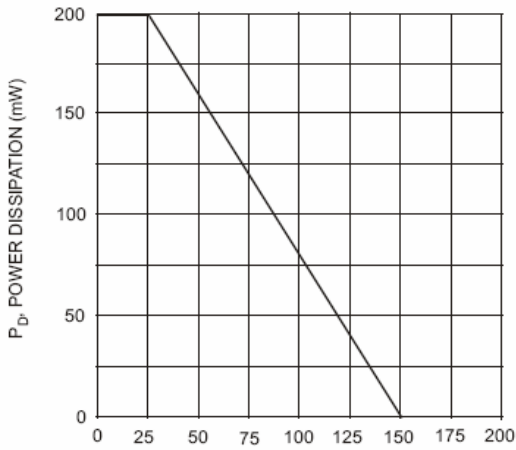


Fig. 1, Max Power Dissipation vs Ambient Temperature

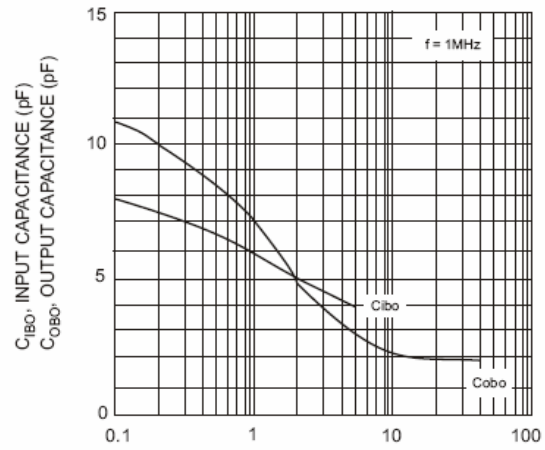


Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage

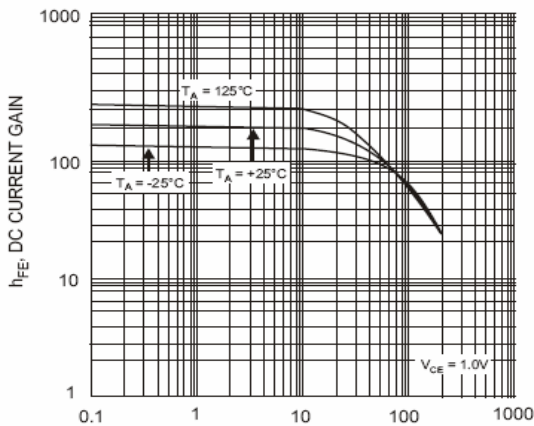


Fig. 3, Typical DC Current Gain vs Collector Current

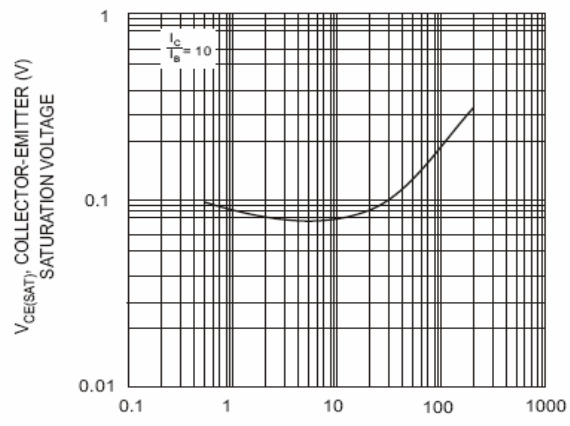


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

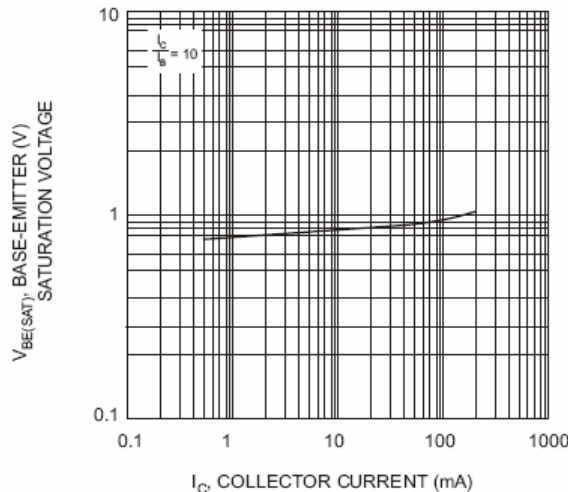


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

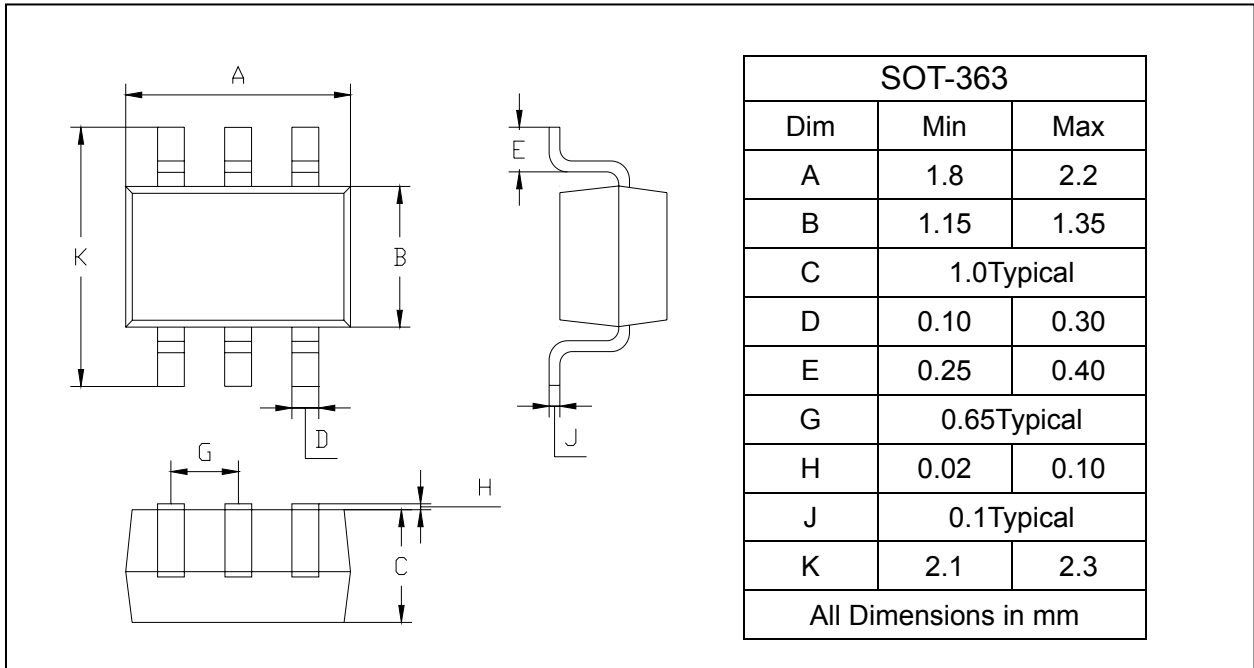
Dual NPN Small Signal Surface Mount Transistor

MMDT3904

PACKAGE OUTLINE

Plastic surface mounted package

SOT-363



PACKAGE INFORMATION

Device	Package	Shipping
MMDT3904	SOT-363	3000/Tape&Reel