

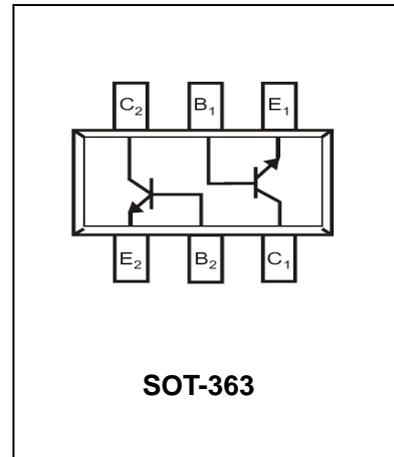
Dual NPN Small Signal Surface Mount Transistor **MMDT4401**

FEATURES

- Epitaxial planar die construction.
- Ultra-small surface mount package.
- Ideal for low power amplification and switching.



Lead-free



APPLICATIONS

- Dual NPN small signal surface mount transistor.

ORDERING INFORMATION

Type No.	Marking	Package Code
MMDT4401	K2X	SOT-363

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	6	V
I_C	Collector Current -Continuous	600	mA
P_D	Power Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	625	°C/W
T_j, T_{stg}	Junction and Storage Temperature	-55 to +150	°C

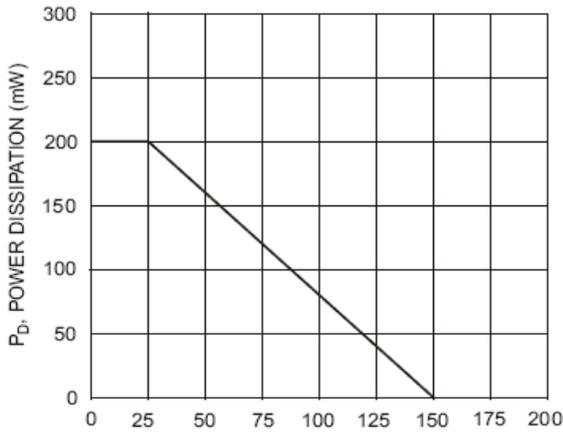
Dual NPN Small Signal Surface Mount Transistor **MMDT4401**

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

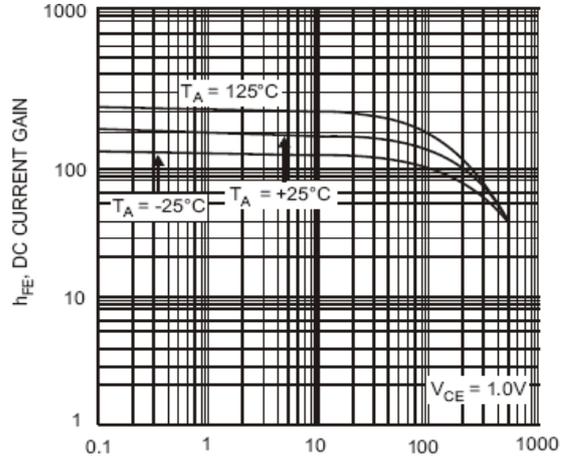
Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	60	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1mA, I_B=0$	40	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu A, I_C=0$	6	-	V
Collector cut-off current	I_{CEX}	$V_{CE}=35V, V_{EB(OFF)}=0.4V$	-	0.1	μA
Base cut-off current	I_{BL}	$V_{CE}=35V, V_{EB(OFF)}=0.4V$	-	0.1	μA
DC current gain	h_{FE}	$V_{CE}=1V, I_C=0.1mA$	20	-	-
		$V_{CE}=1V, I_C=1.0mA$	40	-	
		$V_{CE}=1V, I_C=10mA$	80	-	
		$V_{CE}=1V, I_C=150mA$	100	300	
		$V_{CE}=2V, I_C=500mA$	40	-	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=150mA, I_B=15mA$ $I_C=500mA, I_B=50mA$	-	0.4 0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=150mA, I_B=15mA$ $I_C=500mA, I_B=50mA$	0.75 -	0.95 1.2	V
Transition frequency	f_T	$V_{CE}=10V, I_C=20mA, f=1MHz$	250		MHz
Output Capacitance	C_{obo}	$V_{CB}=5V, f=1.0MHz, I_E=0$	-	6.5	pF
Input Capacitance	C_{ibo}	$V_{EB}=0.5V, f=1.0MHz, I_C=0$	-	30	pF
Delay time	t_d	$V_{CC}=30V, V_{BE(off)}=2V$ $I_C=150mA, I_{B1}=15mA$		15	ns
Rise time	t_r			20	ns
Storage time	t_s	$V_{CC}=30V, I_C=150mA$ $I_{B1}=I_{B2}=15mA$		225	ns
Fall time	t_f			30	ns

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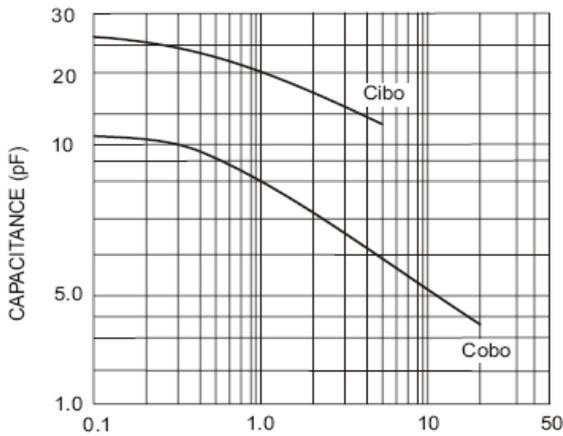
TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified



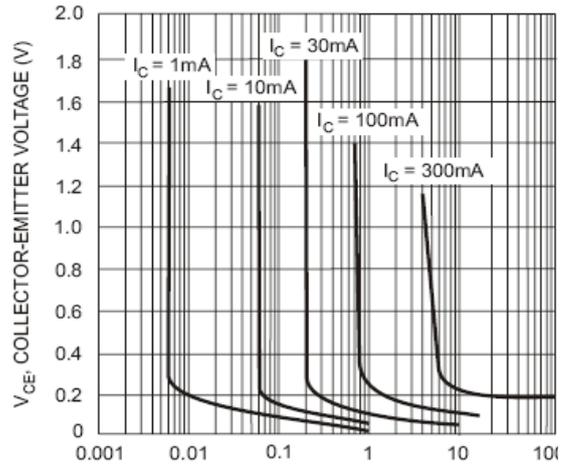
T_A , AMBIENT TEMPERATURE ($^\circ\text{C}$)
 Fig. 1 Max Power Dissipation vs Ambient Temperature



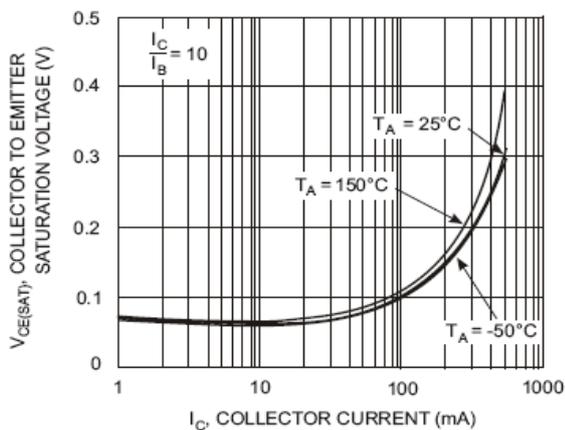
I_{FE} , DC CURRENT GAIN
 I_C , COLLECTOR CURRENT (mA)
 Fig. 2 Typical DC Current Gain vs Collector Current



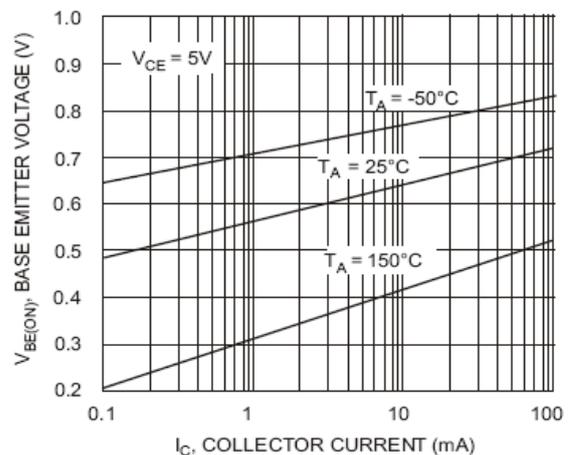
REVERSE VOLTS (V)
 Fig. 3 Typical Capacitance



I_B , BASE CURRENT (mA)
 Fig. 4 Typical Collector Saturation Region



I_C , COLLECTOR CURRENT (mA)
 Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current



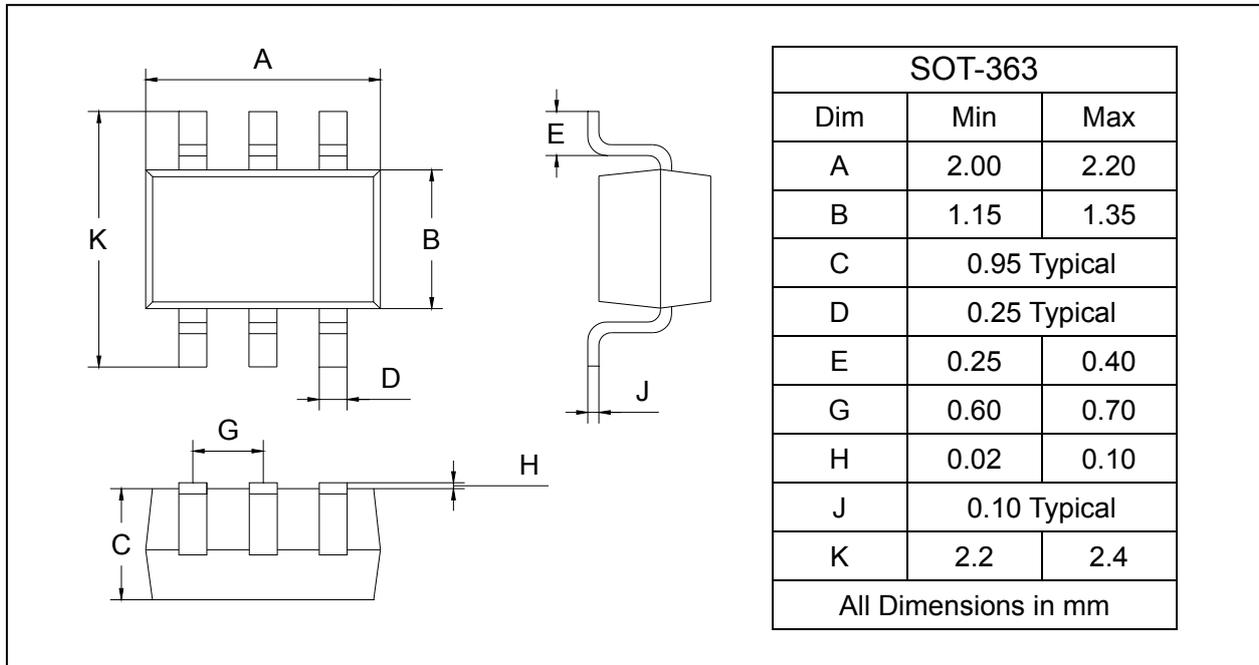
I_C , COLLECTOR CURRENT (mA)
 Fig. 6 Base Emitter Voltage vs. Collector Current

Dual NPN Small Signal Surface Mount Transistor MMDT4401

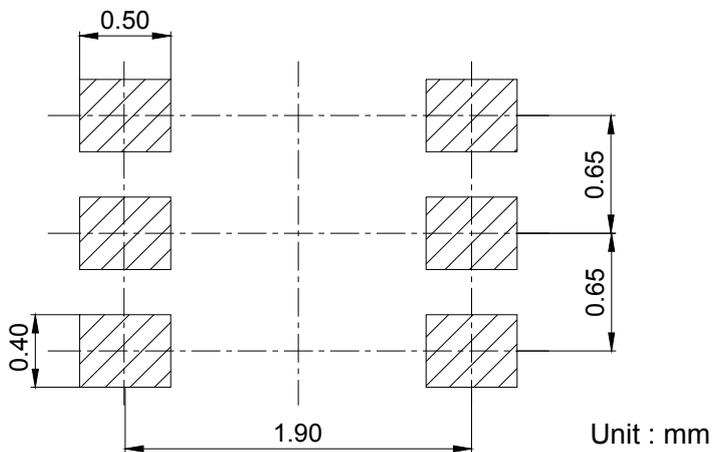
PACKAGE OUTLINE

Plastic surface mounted package

SOT-363



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
MMDT4401	SOT-363	3000/Tape&Reel