

MMDT2222A

Rev.C Oct.-2021

/ Descriptions

SOT-363 NPN Double silicon NPN transistor in a SOT-363 Plastic Package.

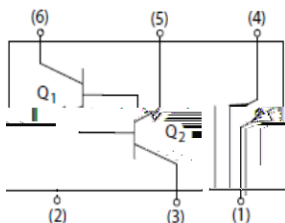
/ Features

600mA
Collector currents up to 600 mA. HF Product.

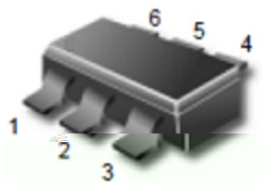
/ Applications

General purpose amplifier.

/ Equivalent Circuit



/ Pinning



PIN 1 4 Emitter

PIN 2 5 Base

PIN 3 6 Collector

/ h_{FE} Classifications & Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	75	V
Collector to Emitter Voltage	V_{CEO}	40	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	600	mA
Total Package Dissipation ^{Note1}	P_D	150	mW
Junction Temperature	T_J	-55 +150	
Storage Temperature Range	T_{stg}	-55 +150	

Note1 Device mounted on FR4 glass epoxy printed circuit board using the minimum recommended footprint.

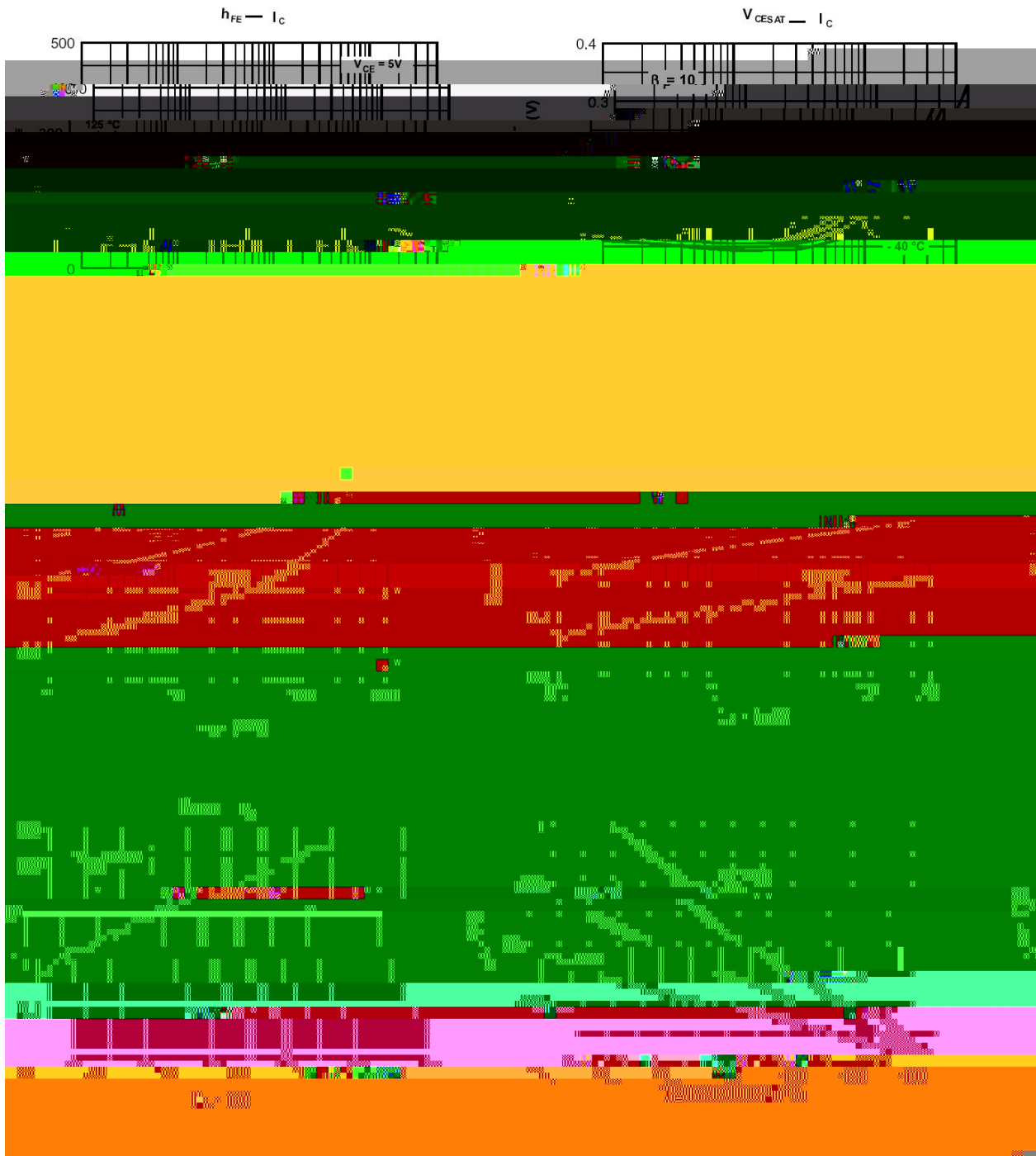
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Base Breakdown Voltage	V_{CBO}	$I_C = 10\mu A$ $I_E = 0$	75			V
Collector Emitter Breakdown Voltage	V_{CEO}	$I_C = 10mA$ $I_B = 0$	40			V
Emitter Base Breakdown Voltage	V_{EBO}					

/ Electrical Characteristics(Ta=25)

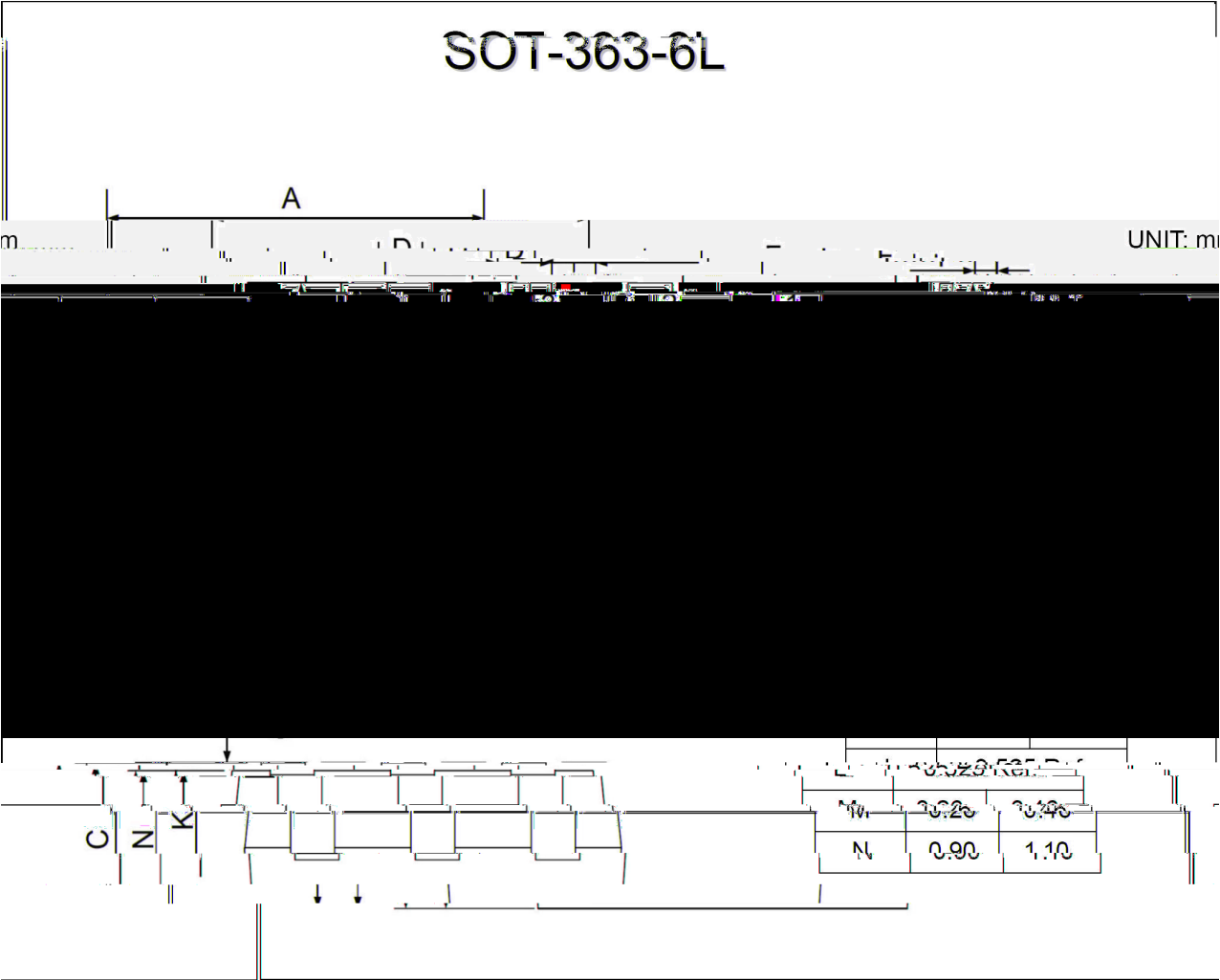
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Saturation Voltage	$V_{CE(sat)} (1)$	$I_C=150mA$ $I_B=15mA$			0.3	V
	$V_{CE(sat)} (2)$	$I_C=500mA$ $I_B=50mA$			1.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)} (1)$	$I_C=150mA$ $I_B=15mA$	0.6		1.2	V
	$V_{BE(sat)} (2)$	$I_C=500mA$ $I_B=50mA$			2.0	V
Transition Frequency(Note 3)	f_T	$V_{CE}=20V$ $I_C=20mA$ $f=100MHz$	300			MHz
Output Capacitance	C_{ob}	$V_{CB}=10V$ $I_E=0$ $f=1.0MHz$			8.0	pF
Input Capacitance	C_{ib}	$V_{EB}=0.5V$ $I_C=0$ $f=1.0MHz$			25	
Input Impedance	h_{ie}	$I_C=1.0mA$ $V_{CE}=10V$ $f=1.0kHz$	2.0		8.0	k Ω
		$I_C=10mA$ $V_{CE}=10V$ $f=1.0kHz$	0.25		1.25	
Voltage Feedback Ratio	h_{re}	$I_C=1.0mA$ $V_{CE}=10V$ $f=1.0kHz$			8.0	$\times 10^{-4}$
		$I_C=10mA$ $V_{CE}=10V$ $f=1.0kHz$			4.0	
Small Signal Current Gain	h_{fe}	$I_C=1.0mA$ $V_{CE}=10V$ $f=1.0kHz$	50		300	-
		$I_C=10mA$ $V_{CE}=10V$ $f=1.0kHz$	75		375	-
Output Admittance	h_{oe}	$I_C=1.0Ma$ $V_{CE}=10V$ $f=1.0kHz$	5.0		35	$\mu mhos$
		$I_C=10mA$ $V_{CE}=10V$ $f=1.0kHz$	25		200	
Collector Base Time Constant	r_b, C_c	$I_E=20mA$ $V_{CB}=20V$ $f=31.8MHz$			150	Ps
Noise Figure	NF	$I_C=100\mu A$ $V_{CE}=10V$ $R_S=1.0k\Omega$ $f=1.0kHz$			4.0	dB
Turn-on Time	t_d	$V_{CC}=30V$ $I_C=150mA$ $V_{BE(OFF)}=-0.5V$			10	ns
Storage Time	t_r	$I_{B1}=15mA$			25	ns
	t_s	$V_{CC}=30V$ $I_C=150mA$			225	ns
Fall Time	t_f	$I_{B1}=I_{B2}=15mA$			60	ns

Note2 . Pulse Test: Pulse Width 300 μs , Duty Cycle 2.0%.Note3: f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.

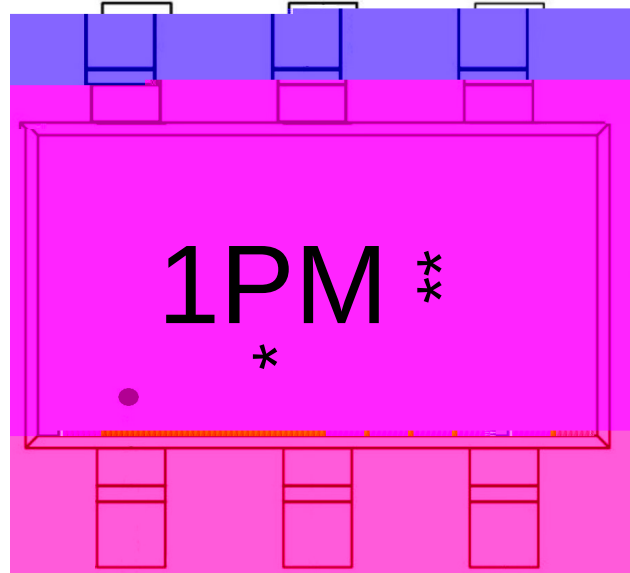
/ Electrical Characteristic Curve



/ Package Dimensions



/ Marking Instructions



“ 1 ”

1PM

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Note:



“ 1 ” Pin

1PM

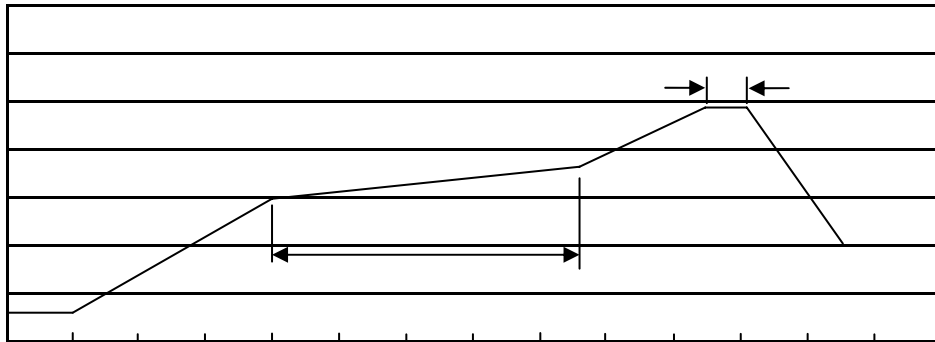
Product Type Code

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Lot No. Code, code change with Lot No.



() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- 1 150 180 60 90sec;
- 2 245±5 5±0.5sec;
- 3 2 10 /sec.

- 1.Preheating:150~180 , Time:60~90sec.
- 2.Peak Temp.:245±5 , Duration:5±0.5sec.
3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260±5

10±1 sec.

Temp.:260±5

Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	只 卷盘	卷盘 盒	只 盒	盒 箱	只 箱		盒	箱

/ Notices