



# MMDT2907AQ

## DUAL PNP GENERAL PURPOSE SWITCHING TRANSISTOR

**VOLTAGE** 60 Volt **POWER** 150 mW

**SOT-363** Unit : inch(mm)

### FEATURES

- PNP epitaxial silicon, planar design
- Collector-emitter voltage  $V_{CE} = -60V$
- Collector current  $I_C = -600mA$
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. . (Halogen Free)

### MECHANICAL DATA

- Case: SOT-363
- Terminals : Solderable per MIL-STD-750,Method 2026
- Approx. Weight: 0.0002 ounces, 0.006 grams
- Marking: M7Q

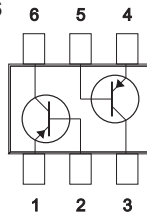
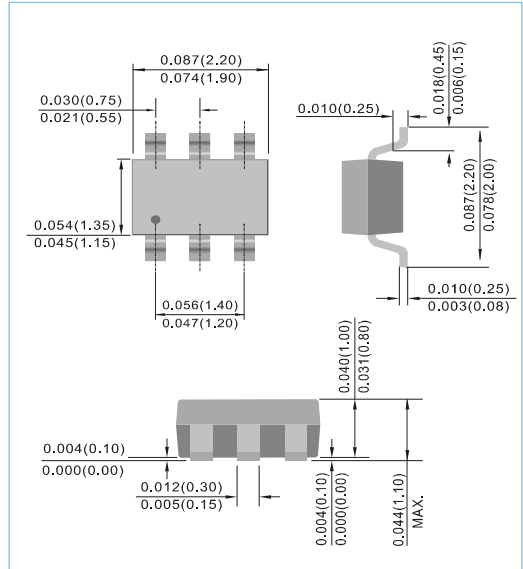


Fig.53



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector-Emitter Voltage	$V_{CEO}$	-60	V
Collector-Base Voltage	$V_{CBO}$	-60	V
Emitter-Base Voltage	$V_{EBO}$	-5.0	V
Collector Current-Continuous	$I_C$	-600	mA

### THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Units
Max Power Dissipation (Note 1)	$P_{TOT}$	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	830	$^{\circ}C / W$
Storage Temperature	$T_{STG}$	-55 to +150	$^{\circ}C$
Junction Temperature	$T_J$	-55 to +150	$^{\circ}C$

Note 1 : Transistor mounted on FR-5 board 1.0 x 0.75 x 0.062 in.



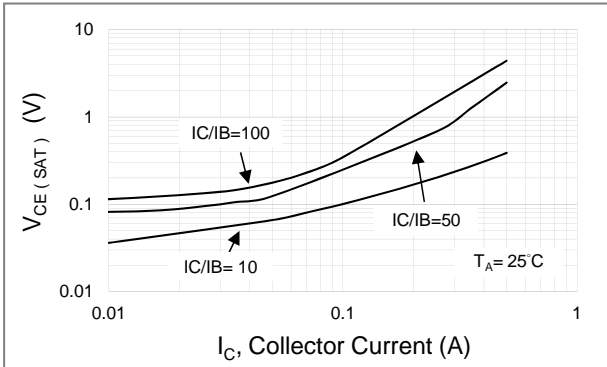
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## ELECTRICAL CHARACTERISTICS $(T_J=25^\circ\text{C}$ , unless otherwise noted)

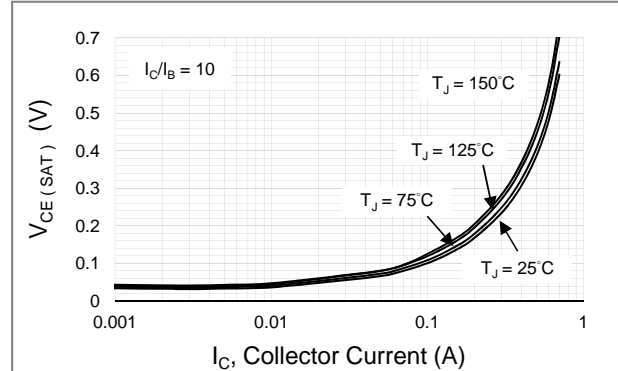
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-10\text{mA}, I_B=0$	-60	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	-60	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5.0	-	-	V
Base Cutoff Current	$I_{BL}$	$V_{CE}=-30\text{V}, V_{EB}=-0.5\text{V}$	-	-	-50	nA
Collector Cutoff Current	$I_{CEX}$	$V_{CE}=-30\text{V}, V_{EB}=-0.5\text{V}$	-	-	-50	nA
	$I_{CBO}$	$V_{CB}=-50\text{V}, I_E=0$	-	-	-10	nA
		$V_{CB}=-50\text{V}, I_E=0$ $T_J=125^\circ\text{C}$	-	-	-10	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$I_C=-0.1\text{mA}, V_{CE}=-10\text{V}$ $I_C=-1.0\text{mA}, V_{CE}=-10\text{V}$ $I_C=-10\text{mA}, V_{CE}=-10\text{V}$ $I_C=-150\text{mA}, V_{CE}=-10\text{V}$ $I_C=-500\text{mA}, V_{CE}=-10\text{V}$	75 100 100 100 50	- - - - -	- - - 300 -	-
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=-150\text{mA}, I_B=-15\text{mA}$ $I_C=-500\text{mA}, I_B=-50\text{mA}$	- -	- -	-0.4 -1.6	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=-150\text{mA}, I_B=-15\text{mA}$ $I_C=-500\text{mA}, I_B=-50\text{mA}$	- -	- -	-1.3 -2.6	V
Collector-Base Capacitance	$C_{CBO}$	$V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$	-	-	8.0	pF
Emitter-Base Capacitance	$C_{EBO}$	$V_{CB}=-2\text{V}, I_C=0, f=1\text{MHz}$	-	-	30	pF
Current Gain-Bandwidth Product	$F_T$	$I_C=-50\text{mA}, V_{CE}=-20\text{V}$ $f=100\text{MHz}$	200	-	-	MHz
Turn-On Time	$t_{on}$	$V_{CC}=-30\text{V}, V_{BE}=-0.5\text{V}$ $I_C=-150\text{mA}, I_B=-15\text{mA}$	-	-	45	ns
Delay Time	$t_d$	$V_{CC}=-30\text{V}, V_{BE}=-0.5\text{V}$ $I_C=-150\text{mA}, I_B=-15\text{mA}$	-	-	20	ns
Rise Time	$t_r$	$V_{CC}=-30\text{V}, V_{BE}=-0.5\text{V}$ $I_C=-150\text{mA}, I_{B1}=-15\text{mA}$	-	-	40	ns
Turn-Off Time	$t_{off}$	$V_{CC}=-6\text{V}, I_C=-150\text{mA}$ $I_{B1}=I_{B2}=-15\text{mA}$	-	-	250	ns
Storage Time	$t_s$	$V_{CC}=-6\text{V}, I_C=-150\text{mA}$ $I_{B1}=I_{B2}=-15\text{mA}$	-	-	230	ns
Fall Time	$t_f$	$V_{CC}=-6\text{V}, I_C=-150\text{mA}$ $I_{B1}=I_{B2}=-15\text{mA}$	-	-	30	ns



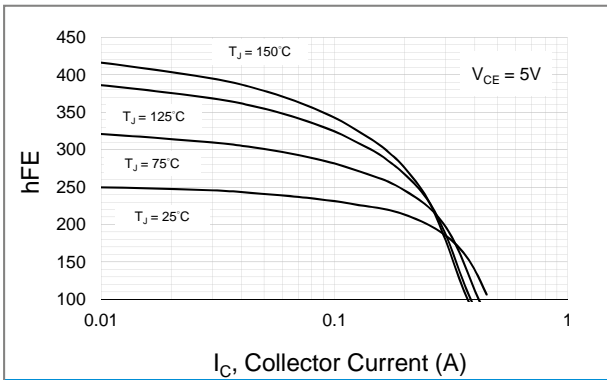
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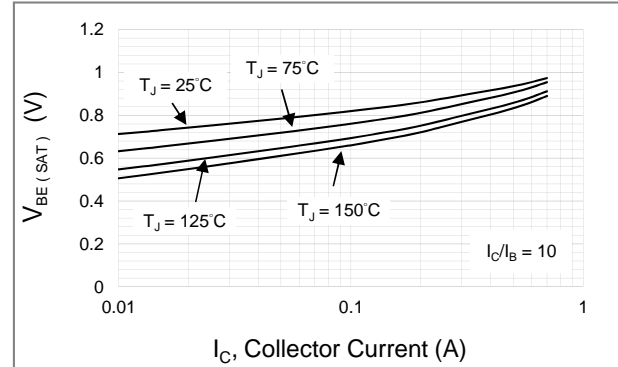
**Fig.1 Typical Collector-Emitter Saturation Voltage**



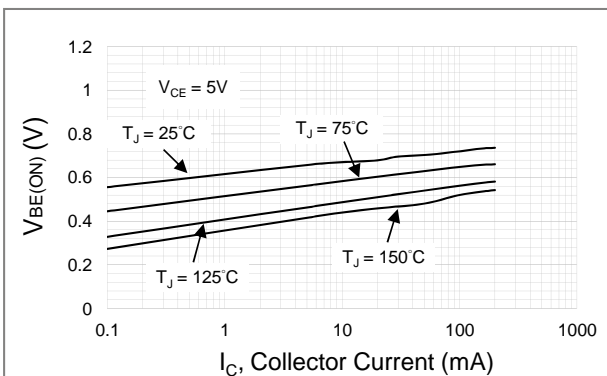
**Fig.2 Typical Collector-Emitter Saturation Voltage**



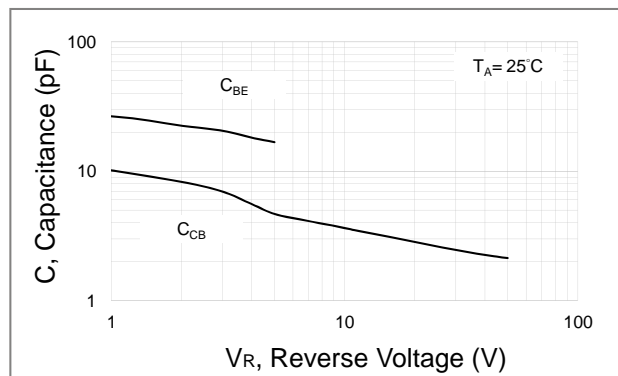
**Fig.3 Typical DC Current Gain vs Collector Current**



**Fig.4 Typical Base-Emitter Saturation Voltage**



**Fig.5 Typical Base - Emitter Voltage vs Collector Current**

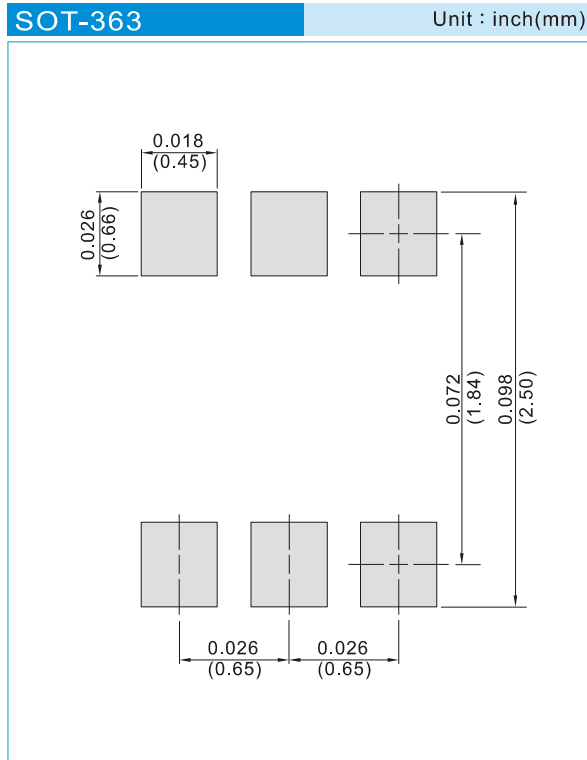


**Fig.6 Typical Capacitance**



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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



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## Part No\_packing code\_Version

MMDT2907AQ\_R1\_00001

MMDT2907AQ\_R2\_00001

For example :

RB500V-40\_R2\_00001



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			



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