

Small Signal Surface Mount Transistor

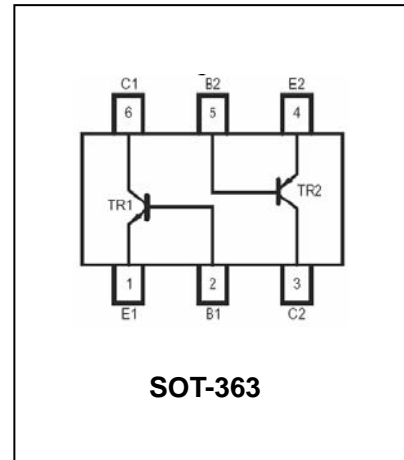
MMDT2227

FEATURES

- Epitaxial planar die construction.
- Complementary Pair.
- Ultra-small surface mount package.
- One 2222A-Type NPN,
One 2907A-Type PNP.



Lead-free



APPLICATIONS

- Ideal for low power amplification and switching .

ORDERING INFORMATION

Type No.	Marking	Package Code
MMDT2227	K27	SOT-363

MAXIMUM RATING ,NPN 2222A Section @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	75	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

MAXIMUM RATING ,PNP 2907A Section @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-60	V
V_{CEO}	Collector-Emitter Voltage	-60	V
V_{EBO}	Emitter-Base Voltage	-5	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

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ELECTRICAL CHARACTERISTICS OF TR2 , NPN2222A SECTION

@ Ta=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	75	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	40	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6	-	V
Collector cut-off current	I_{CBO}	$V_{CB}=60V, I_E=0$ $V_{CB}=60V, I_E=0, T_A=150^\circ C$	-	10 10	nA μA
Collector cut-off current	I_{CEX}	$V_{CE}=60V, V_{EB(OFF)}=3.0V$	-	10	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=3V, I_C=0$	-	10	nA
Base cut-off current	I_{BL}	$V_{CE}=60V, V_{EB(OFF)}=3.0V$	-	20	nA
DC current gain	h_{FE}	$V_{CE}=10V, I_C=100\mu A$	35	-	
		$V_{CE}=10V, I_C=1.00mA$	50	-	
		$V_{CE}=10V, I_C=10mA$	75	-	
		$V_{CE}=10V, I_C=150mA$	100	300	
		$V_{CE}=10V, I_C=500mA$	40	-	
		$V_{CE}=10V, I_C=10mA, T_A=-55^\circ C$ $V_{CE}=1.0V, I_C=150mA,$	50 35	- -	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=150mA, I_B=15mA$ $I_C=500mA, I_B=50mA$	-	0.3 1.0	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=150mA, I_B=15mA$ $I_C=500mA, I_B=50mA$	0.6 -	1.2 2.0	V
Transition frequency	f_T	$V_{CE}=20V, I_C=20mA, f=100MHz$	300	-	MHz
Output Capacitance	C_{obo}	$V_{CB}=10V, f=1.0MHz, I_E=0$	-	8	pF
Input Capacitance	C_{ibo}	$V_{EB}=0.5V, f=1.0MHz, I_C=0$	-	25	pF
Noise Figure	NF	$V_{CE}=10V, f=1.0kHz, I_C=0.1mA$ $R_g=1.0K\Omega,$	-	4.0	dB
Delay Time	t_d	$V_{CC}=30V, I_C=150mA,$ $V_{BE(off)}=-0.5V, I_{B1}=15mA$	-	10	ns
Rise Time	t_r		-	25	ns

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ELECTRICAL CHARACTERISTICS OF TR2, PNP2907A SECTION

@ Ta=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu A$ $I_E = 0$	-60	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10mA$ $I_B = 0$	-60	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu A$ $I_C = 0$	-5	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = -50V$ $I_E = 0$ $V_{CB} = -50V$ $I_E = 0$ $T_A = 125^\circ C$	-	-10	nA μA
Collector cut-off current	I_{CEX}	$V_{CE} = -30V$ $V_{EB(OFF)} = -0.5V$	-	-50	nA
Base cut-off current	I_{BL}	$V_{CE} = -30V$ $V_{EB(OFF)} = -0.5V$	-	-50	nA
DC current gain	h_{FE}	$V_{CE} = -10V$ $I_C = -100\mu A$	75	-	
		$V_{CE} = -10V$ $I_C = -1mA$	100	-	
		$V_{CE} = -10V$ $I_C = -10mA$	100	-	
		$V_{CE} = -10V$ $I_C = -150mA$	100	300	
		$V_{CE} = -10V$ $I_C = -500mA$	50	-	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -150mA$ $I_B = -15mA$ $I_C = -500mA$ $I_B = -50mA$	-	-0.4 -1.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -150mA$ $I_B = -15mA$ $I_C = -500mA$ $I_B = -50mA$	-	-1.3 -2.6	V
Transition frequency	f_T	$V_{CE} = -20V$, $I_C = -50mA$, $f = 100MHz$	200	-	MHz
Output Capacitance	C_{obo}	$V_{CB} = -10V$, $f = 1.0MHz$, $I_E = 0$	-	-8.0	pF
Input Capacitance	C_{ibo}	$V_{EB} = -2.0V$, $f = 1.0MHz$, $I_C = 0$	-	30	pF
Turn-on time	t_{on}	$I_C = -150mA$, $V_{CC} = -30V$, $I_{B1} = -15mA$	-	45	ns
Delay Time	t_d	$V_{CC} = -30V$, $I_C = -150mA$, $I_{B1} = -15mA$	-	10	ns
Rise Time	t_r		-	40	ns

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TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

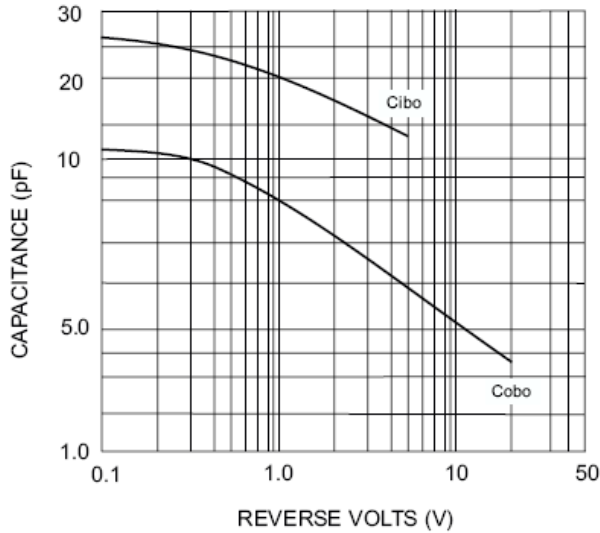


Fig. 1 (2222A) Capacitances (Typical)

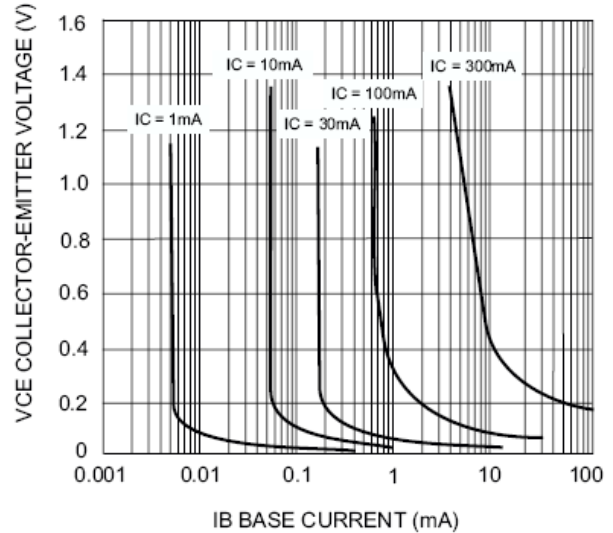


Fig. 4 (2907A) Typical Collector Saturation Region

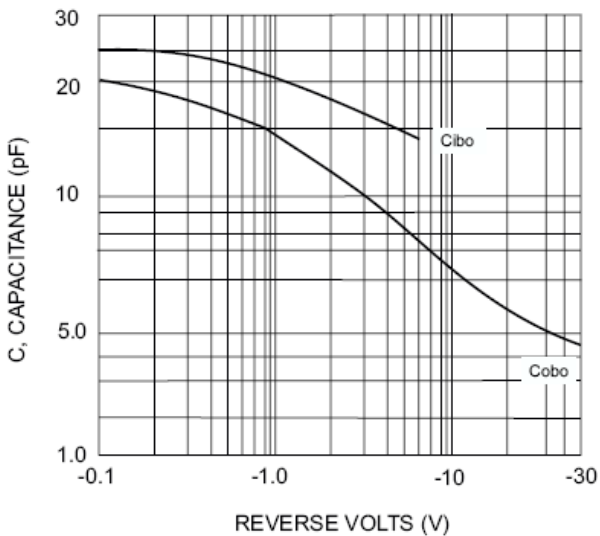


Fig. 3 (2907A) Capacitances (Typical)

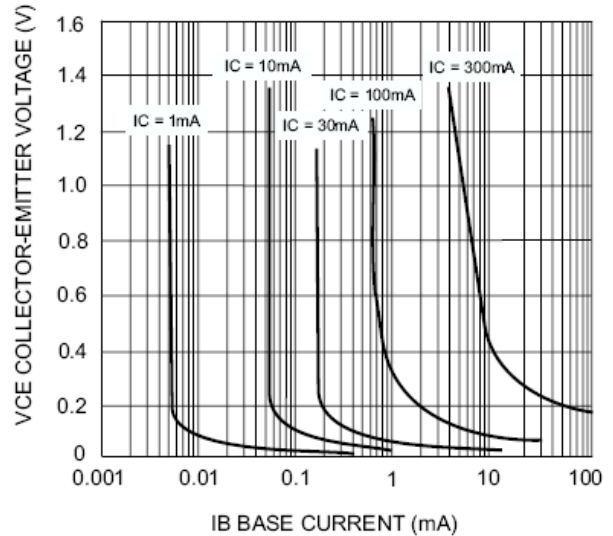


Fig. 4 (2907A) Typical Collector Saturation Region

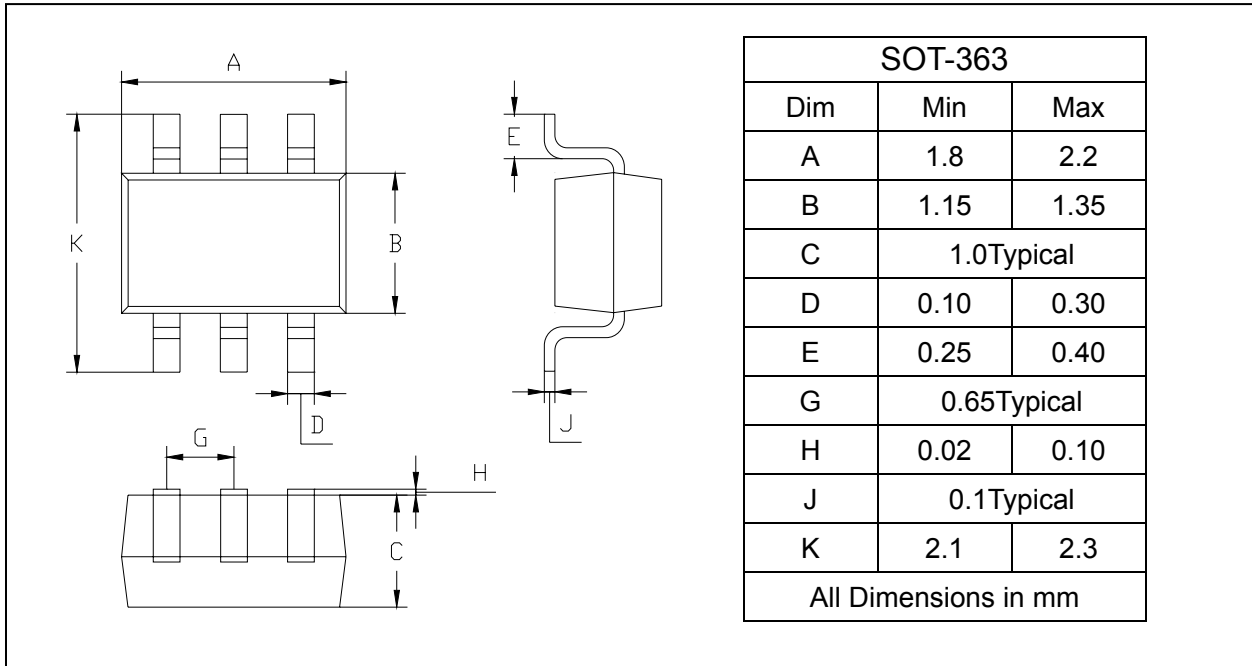
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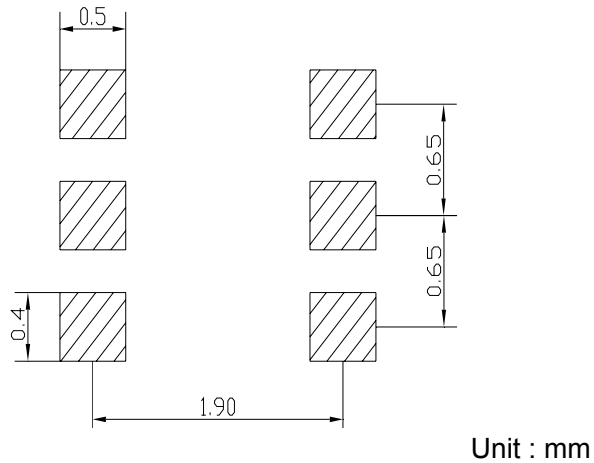
PACKAGE OUTLINE

Plastic surface mounted package

SOT-363



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
MMDT2227	SOT-363	3000/Tape&Reel

www.s-manuals.com