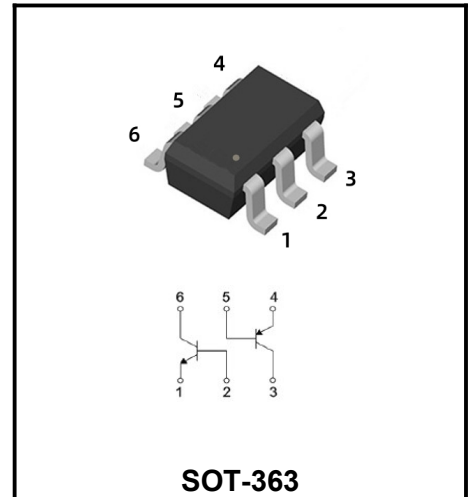


**Plastic-Encapsulate Transistors
DUAL TRANSISTOR (NPN+PNP)**
FEATURE

- Epitaxial planar die construction
- One 2222A NPN
 - One 2907A PNP
- Ideal for power amplification and switching

Marking Code	
MMDT2227DW	K27


SOT-363
NPN 2222A
MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current -Continuous	I_C	600	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_J	150	℃
Storage Temperature	T_{stg}	-55-150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃ 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}	$V_{CB} = 60V, I_E = 0$	-	10	nA
Collector cut-off current	I_{CEX}	$V_{CE} = 60V, V_{EB(off)} = 3V$	-	10	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = 3V, I_C = 0$	-	10	nA
DC current gain	$h_{FE(1)}$	$V_{CE} = 10V, I_C = 0.1mA$	35	-	-
	$h_{FE(2)}$	$V_{CE} = 10V, I_C = 1mA$	50	-	-
	$h_{FE(3)}$	$V_{CE} = 10V, I_C = 10mA$	75	-	-
	$h_{FE(4)}$	$V_{CE} = 10V, I_C = 150mA$	100	300	-
	$h_{FE(5)}$	$V_{CE} = 10V, I_C = 500mA$	40	-	-
	$h_{FE(6)}$	$V_{CE} = 1V, I_C = 150mA$	35	-	-
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	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	V
Transition frequency	f_T	$V_{CE} = 20V, I_C = 20mA, f = 100MHz$	300	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	-	8	pF
Input Capacitance	C_{ib}	$V_{EB} = 0.5V, I_C = 0, f = 1MHz$	-	25	pF
Noise Figure	NF	$V_{CE} = 10V, I_C = 100\mu A, f = 1KHz, R_s = 1K\Omega$	-	4	dB

Switching characteristics

Parameter	Symbol	Test conditions	Min	Max	Unit
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
Storage time	t_s			225	ns
Fall time	t_f			60	ns

PNP 2907A

MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	-60	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current -Continuous	I_C	-600	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{stg}	-55-150	°C

ELECTRICAL CHARACTERISTICS (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}	$V_{CB} = -50V, I_E = 0$	-	-10	nA
Collector cut-off current	I_{CEX}	$V_{CE} = -30V, V_{EB(off)} = -0.5V$	-	-50	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = -3V, I_C = 0$	-	-10	nA
DC current gain	$h_{FE(1)}$ *	$V_{CE} = -10V, I_C = -0.1mA$	75	-	-
	$h_{FE(2)}$ *	$V_{CE} = -10V, I_C = -1mA$	100	-	-
	$h_{FE(3)}$ *	$V_{CE} = -10V, I_C = -10mA$	100	-	-
	$h_{FE(4)}$ *	$V_{CE} = -10V, I_C = -150mA$	100	300	-
	$h_{FE(5)}$ *	$V_{CE} = -10V, I_C = -500mA$	50	-	-
Collector-emitter saturation voltage	$V_{CE(sat)1}$ *	$I_C = -150mA, I_B = -15mA$	-	-0.4	V
	$V_{CE(sat)2}$ *	$I_C = -500mA, I_B = -50mA$	-	-1.6	V
Base-emitter saturation voltage	$V_{BE(sat)1}$ *	$I_C = -150mA, I_B = -15mA$	-	-1.3	V
	$V_{BE(sat)2}$ *	$I_C = -500mA, I_B = -50mA$	-	-2.6	V
Transition frequency	f_T	$V_{CE} = -20V, I_C = -50mA, f = 100MHz$	200	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = -10V, I_E = 0, f = 1MHz$	-	8	pF
Input Capacitance	C_{ib}	$V_{EB} = -2V, I_C = 0, f = 1MHz$	-	30	pF
Delay time	t_d	$V_{CC} = -30V, I_C = -150mA, I_{B1} = -15mA$	-	10	ns
Rise time	t_r		-	40	ns
Storage time	t_s		-	225	ns
Fall time	t_f		-	60	ns

Typical Characteristics

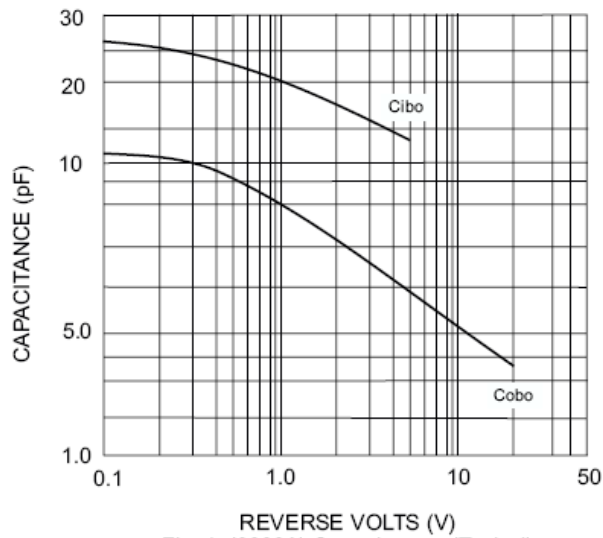


Fig. 1 (2222A) Capacitances (Typical)

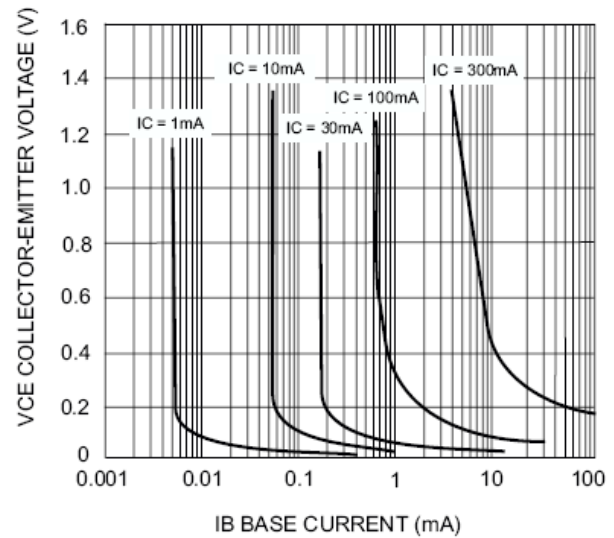


Fig. 4 (2907A) Typical Collector Saturation Region

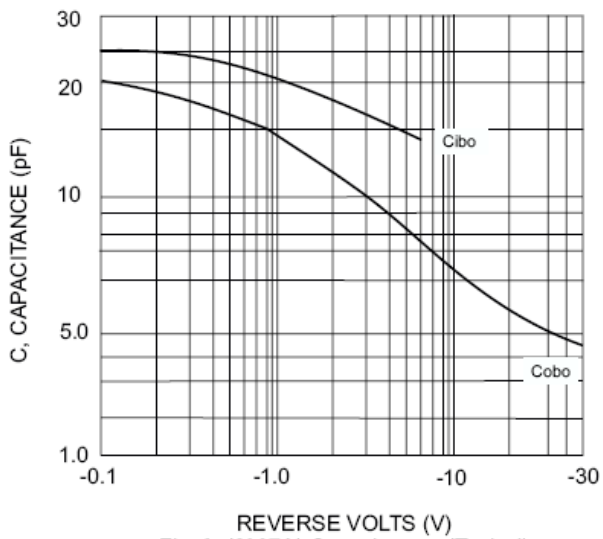


Fig. 3 (2907A) Capacitances (Typical)

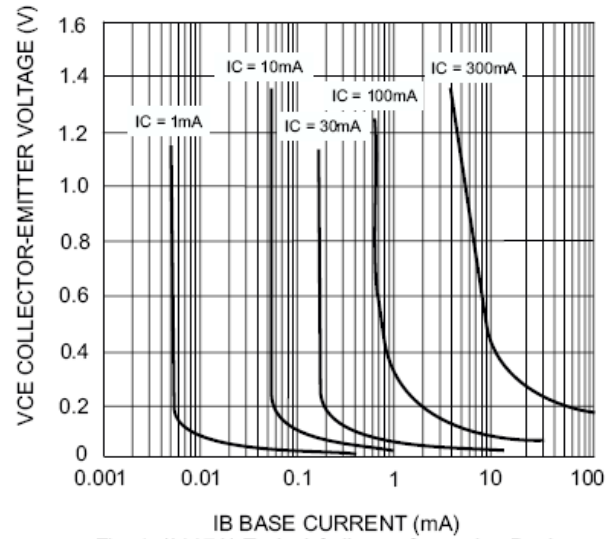


Fig. 4 (2907A) Typical Collector Saturation Region

Ordering information

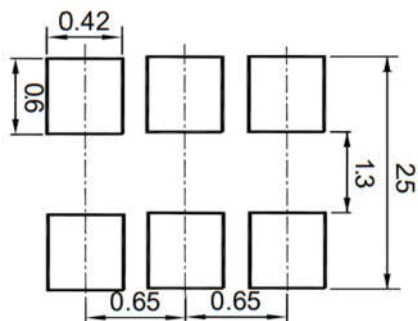
Package	Packing Description	Packing Quantity
SOT-363	Tape/Reel, 7" reel	3000PCS/Reel 120000PCS/Carton

Package Dimensions

SOT-363

Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	0.8	1.1	32	43
A1	-	0.1	-	3.94
bp	0.20	0.30	7.87	11.81
c	0.10	0.25	3.94	9.84
D	1.8	2.2	70.87	86.61
E	1.15	1.35	45.28	53.15
e	1.3		51.18	
e1	0.65		25.6	
HE	2.0	2.2	78.74	86.6
Lp	0.15	0.45	5.90	17.71
Q	0.15	0.25	5.90	9.84
v	0.2		7.78	
w	0.2		7.78	
y	0.1		3.94	

The recommended mounting pad size



Disclaimer

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