

FMUN5214DW

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FMUN5214DW

NPN Silicon Surface Mount Transistors with Monolithic Bias Resistor Network

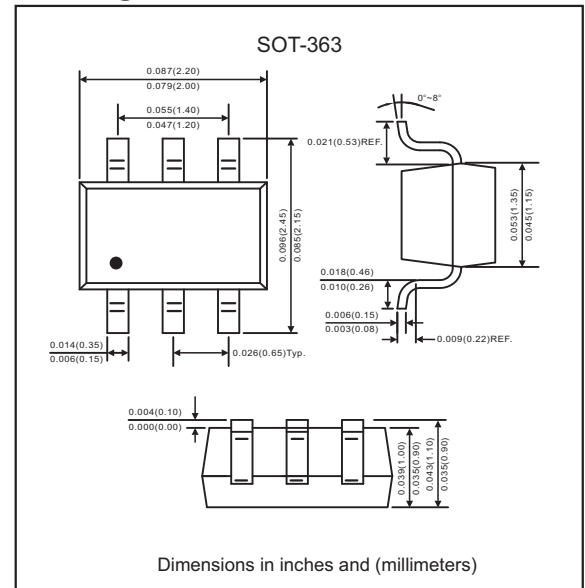
Features

- For Switching and interface circuit and drive circuit applications.
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. FMUN5214DW-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-363
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted, Common for Q_1 and Q_2)

Parameter	Symbol	Value	Unit
Collector base voltage	V_{CBO}	50	V
Collector to emitter voltage	V_{CEO}	50	V
Collector current	I_C	100	mA
Power dissipation (Note1)	P_D	187	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$
Thermal resistance junction to ambient (Note 1)	$R_{\theta JA}$	493	$^\circ\text{C/W}$
Thermal resistance junction to lead (Note 1)	$R_{\theta JL}$	188	$^\circ\text{C/W}$

Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted, Common for Q_1 and Q_2) (Continued)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector base breakdown voltage	$I_C=10\mu\text{A}$	$V_{(BR)CBO}$	50			V
Collector Emitter breakdown voltage	$I_C=2\text{mA}$	$V_{(BR)CEO}$	50			V
Collector base cutoff current	$V_{CB}=50\text{V}$	I_{CBO}			100	nA
Collector emitter cutoff current	$V_{CE}=50\text{V}$	I_{CEO}			500	nA
Emitter base cut off current	$V_{EB}=6\text{V}$	I_{EBO}			0.2	mA
DC current gain	$V_{CE}=10\text{V}$, $I_C=5\text{mA}$	h_{FE}	80			
Collector emitter saturation voltage	$I_C=10\text{mA}$, $I_B=0.3\text{mA}$	$V_{CE(sat)}$			0.25	V
Output voltage (on)	$V_{CC}=5\text{V}$, $V_B=2.5\text{V}$, $R_L=1\text{K}\Omega$	V_{OL}			0.2	V
Output voltage (off)	$V_{CC}=5\text{V}$, $V_B=0.5\text{V}$, $R_L=1\text{K}\Omega$	V_{OH}	4.9			V
Input resistance		R_1	7		13	$\text{K}\Omega$
Resistance ratio		R_1 / R_2	0.17		0.25	

Note : 1. FR-4 @Minimum pad

Rating and characteristic curves (FMUN5214DW)

Figure.1 $V_{CE(sat)}$ versus I_C

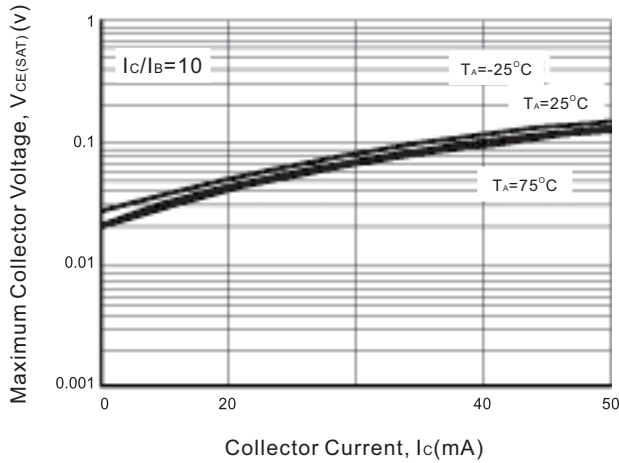


Figure.2 DC Current Gain

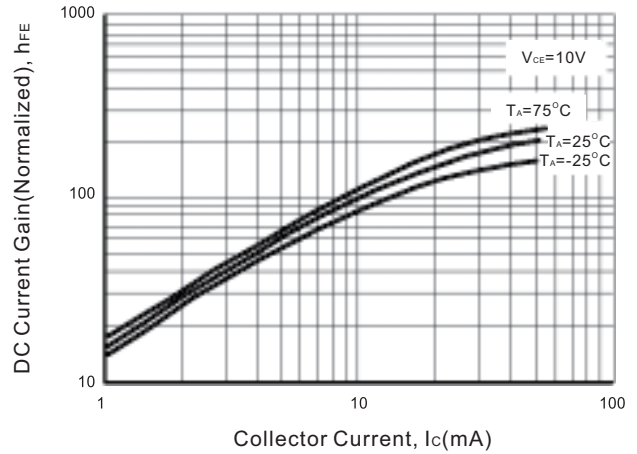


Figure.3 Output Capacitance

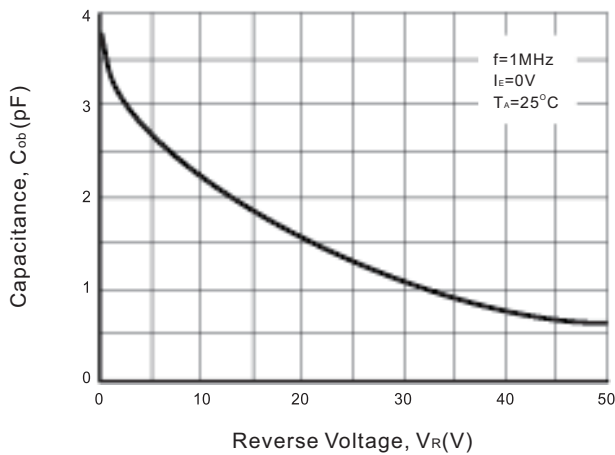


Figure.4 Output Current versus Input Voltage

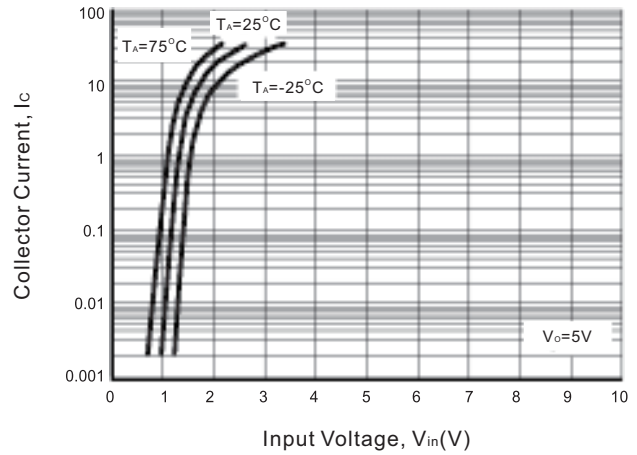
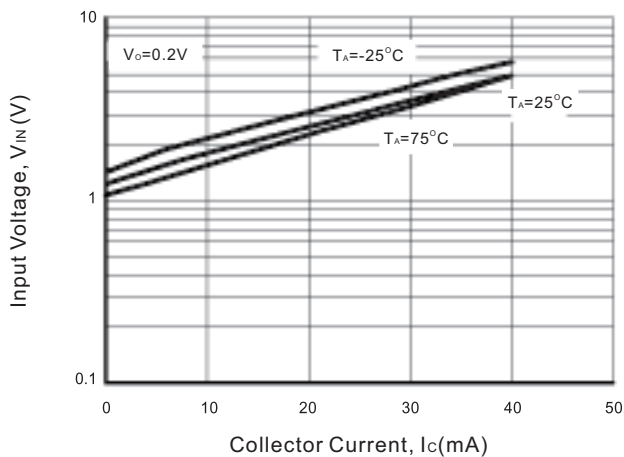
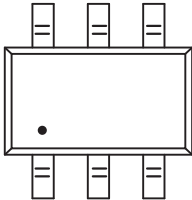
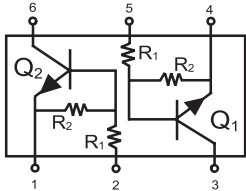


Figure.5 Input Voltage versus Output Current

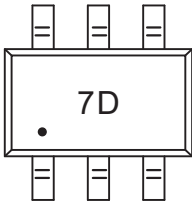


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Pinning information

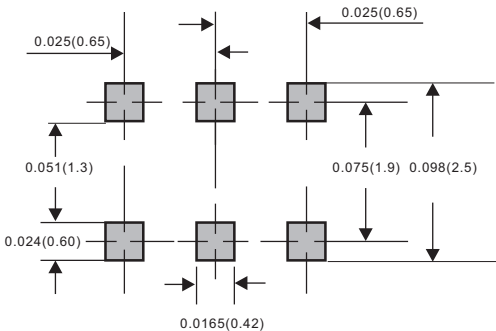
Pin	Simplified outline	Symbol
Pin2, 5 Base Pin1, 4 Emitter Pin3, 6 Collector		

Marking

Type numbe	Marking code
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Suggested solder pad layout

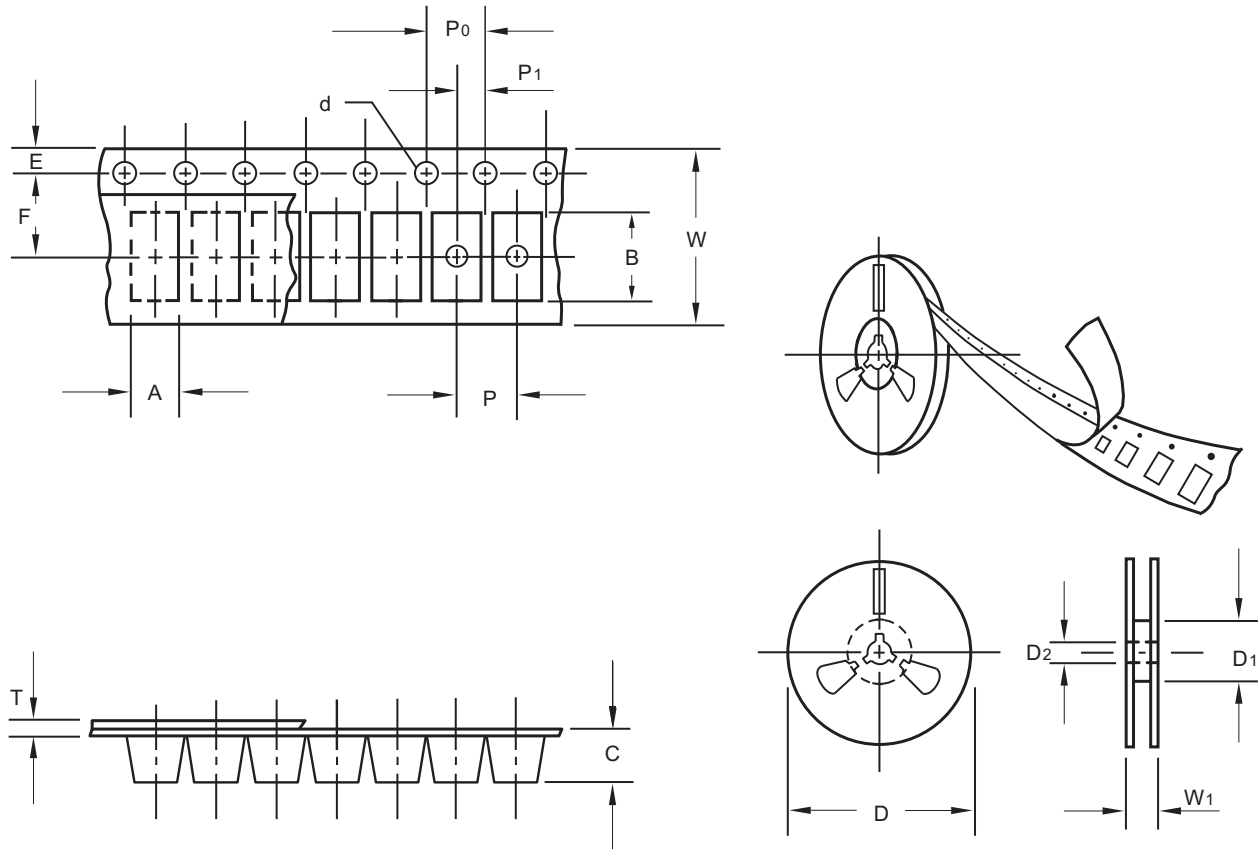
SOT-363



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-363
Carrier width	A	0.1	2.36
Carrier length	B	0.1	2.40
Carrier depth	C	0.1	1.20
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

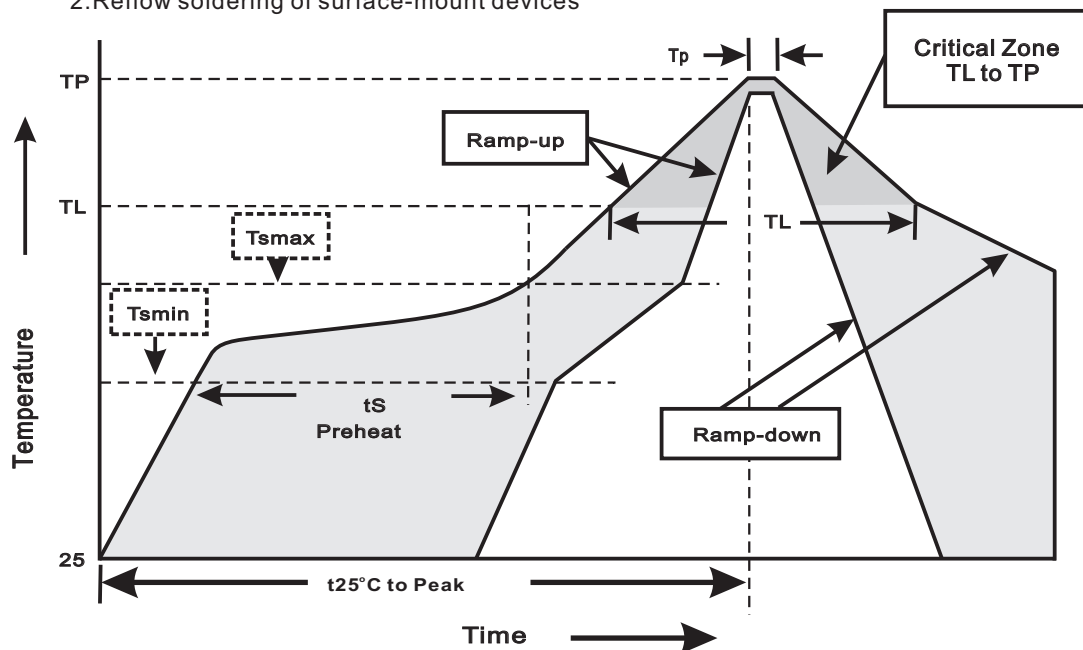
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-363	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.50

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _p)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes