Features

HF

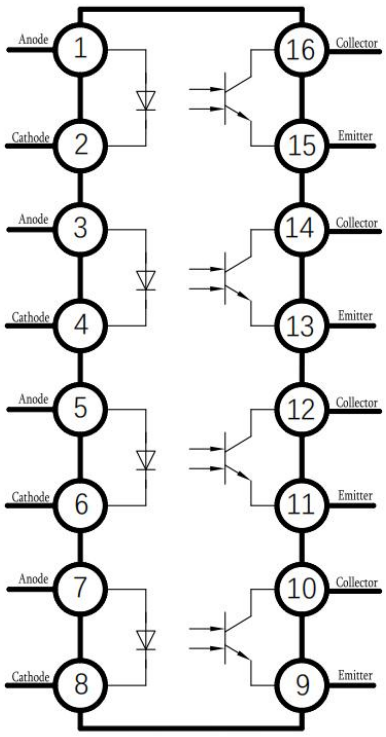
- Current transfer ratio
  (CTR: 50~600% at I_F = 5mA, V_{CE} = 5V)
- High isolation voltage between input and output (Viso =3750V rms)
- Collector - emitter breakdown voltage BV_{CEO} ≥ 80V
- Operating Temperature: -55℃~110℃

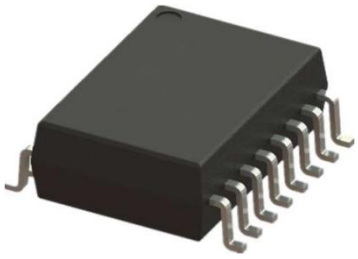
Applications

- DC-DC converter
- Communication equipment
- Programmable controller
- Signal transmission

Mechanical Data

- Case: SSOP16
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208





Ordering Information

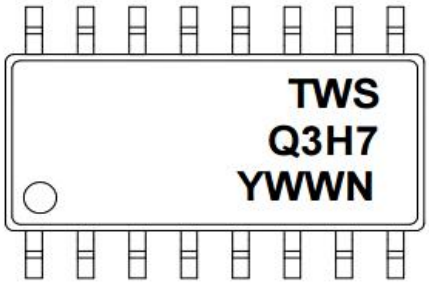
TWS	Q3H7	(M)	(G)	-	(U)	(N)	(Y)
①	②	③	④		⑤	⑥	⑦

① Brand(TWS)
② Product series(Q3H7)
③ Package type(None:SSOP16)
④ Halogen option(None :Halogen free)
⑤ Lead frame (None: Copper)
⑥ Customer option 1 (0-9 or A-Z or None)
⑦ Customer option 2 (0-9 or A-Z or None)

Part Number	Package	Shipping Quantity	Marking Code
TWSQ3H7	SSOP16	2000 pcs / Tape & Reel	TWSQ3H7

Marking Information

- "TWS" denotes brand
- "Q3H7" denotes product series
- "Y" denotes Year : A(2024), B(2025), C(2026) .....
- "WW" denotes Week's number
- "N" denotes the day of Week.



Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Input	Forward Current	I_F	50	mA
	Peak Forward Current *1	I_{FP}	1	A
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	70	mW
Output	Collector Power Dissipation	P_C	150	mW
	Collector Current	I_C	50	mA
	Collector-Emitter Voltage	V_{CEO}	80	V
	Emitter-Collector Voltage	V_{ECO}	7	V

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{TOT}	200	mW
Isolation Voltage *2	V_{ISO}	3750	Vrms
Operating Temperature	T_{OPR}	-55 ~ +110	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°C
Soldering Temperature *3	T_{SOL}	260	°C

Notes:
1. Pulse width≤1μs, Duty ratio: 0.001
2. 40 to 60% RH, AC for 1 minute
3. For 10 seconds

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	I_F = 20mA	-	1.2	1.4	V
	Reverse Current	I_R	V_R = 4V	-	-	10	μA
	Terminal Capacitance	C_t	V = 0V, f = 1kHz	-	30	250	pF
Output	Collector-Emitter Dark Current	I_{CEO}	V_{CE} = 20V, I_F = 0	-	-	100	nA
	Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F = 0	80	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E = 10μA, I_F = 0	7	-	-	V
Transfer Characteristics	Current Transfer Ratio	CTR	I_F = 5 mA, V_{CE} = 5V	50	-	600	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 10mA, I_C = 1mA	-	0.1	0.2	V
	Isolation Resistance	R_{ISO}	V_{IO} = 500Vdc 40~60% R.H.	5×10^{10}	1×10^{11}	-	Ω
	Floating Capacitance	C_f	V = 0, f = 1MHz	-	0.3	1.0	pF
	Turn On Time	T_{on}	V_{CE}=2V, RL= 100Ω I_C=2mA	-	5	18	μs
	Turn Off Time	T_{off}		-	3	18	

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

Fig.1 Relative Current Transfer Ratio vs. Forward Current

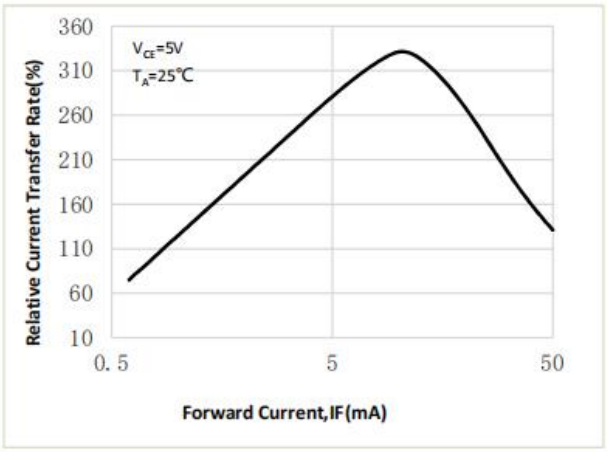


Fig.2 Forward Current vs. Forward Voltage

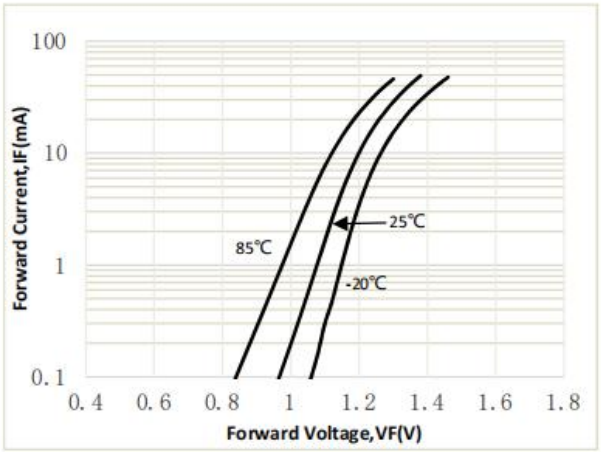


Fig.3 Collector Current vs. Collector-emitter Voltage

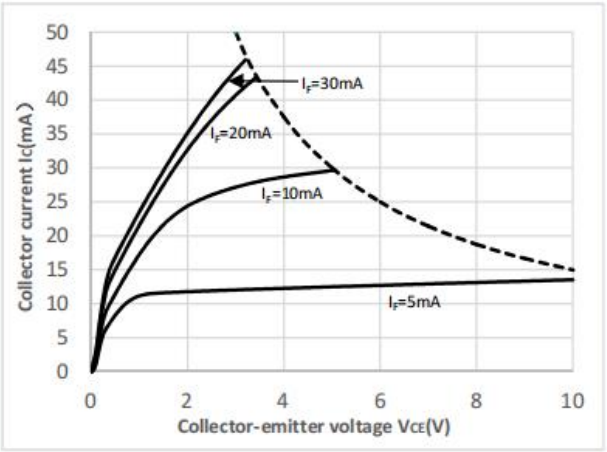


Fig4 Relative Current Transfer Ratio vs. Ambient Temperature

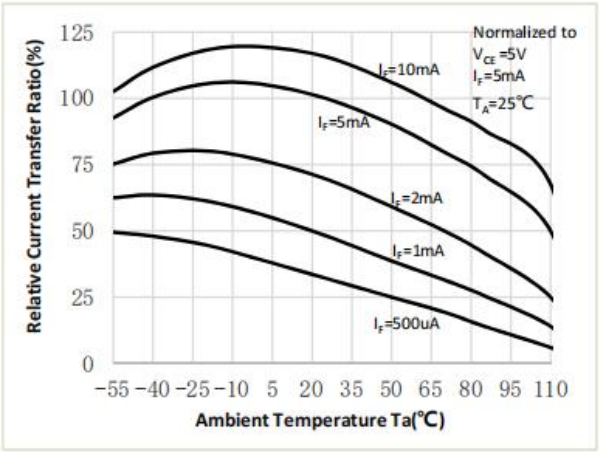


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

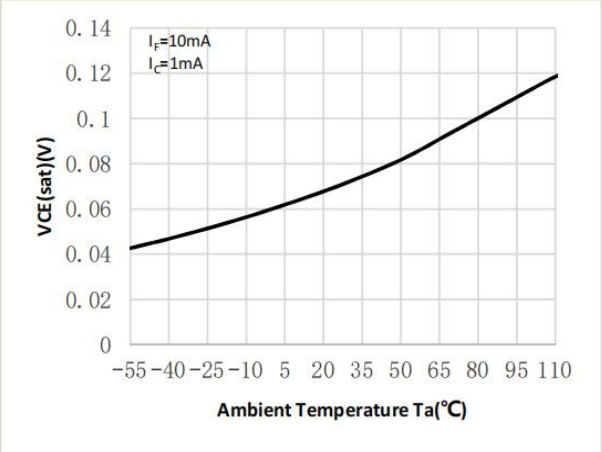


Fig.6 Collector Dark Current vs. Ambient Temperature

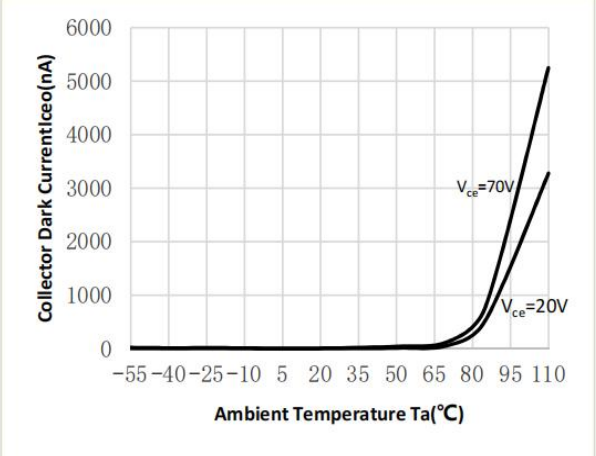


Fig.7 Response Time vs. Load Resistance

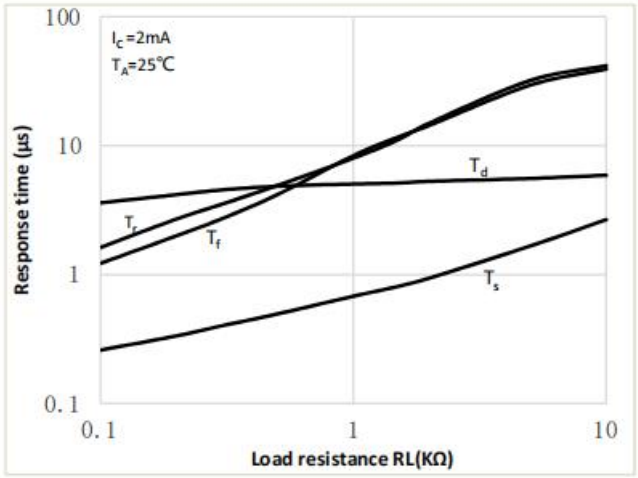


Fig.8 Frequency Response

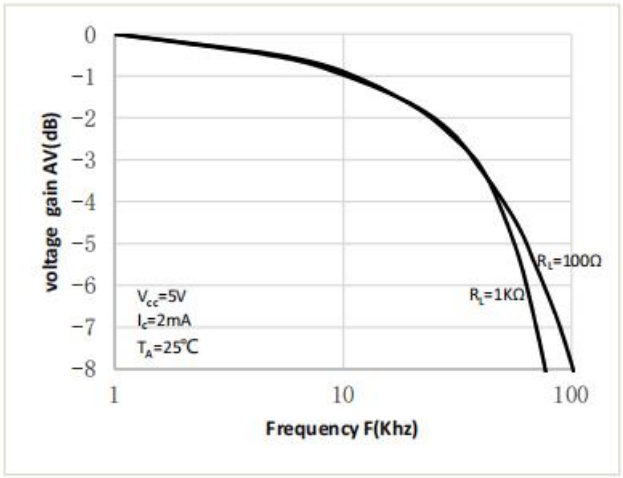


Fig.9 Collector-emitter Saturation Voltage vs. Forward Current

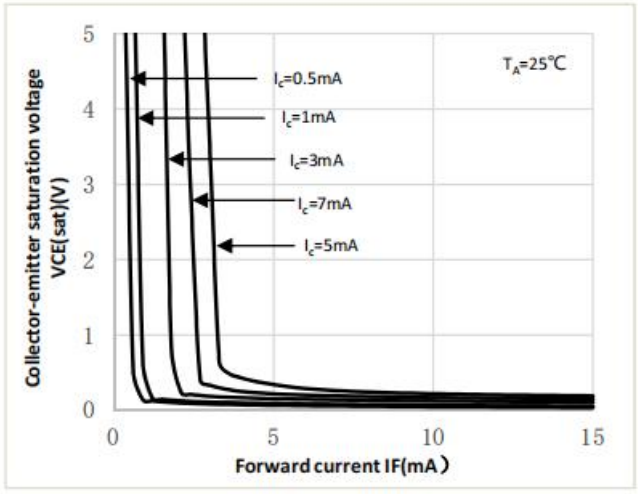
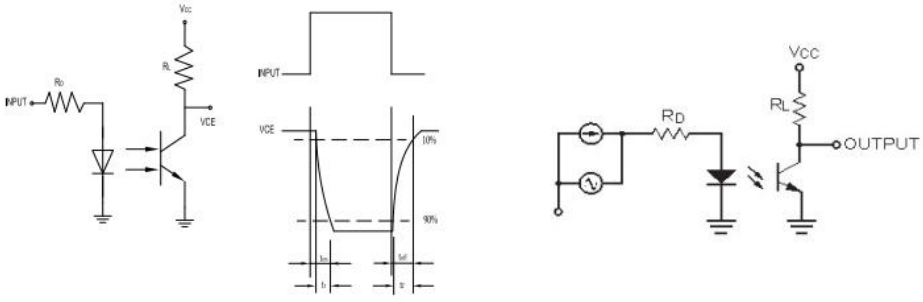
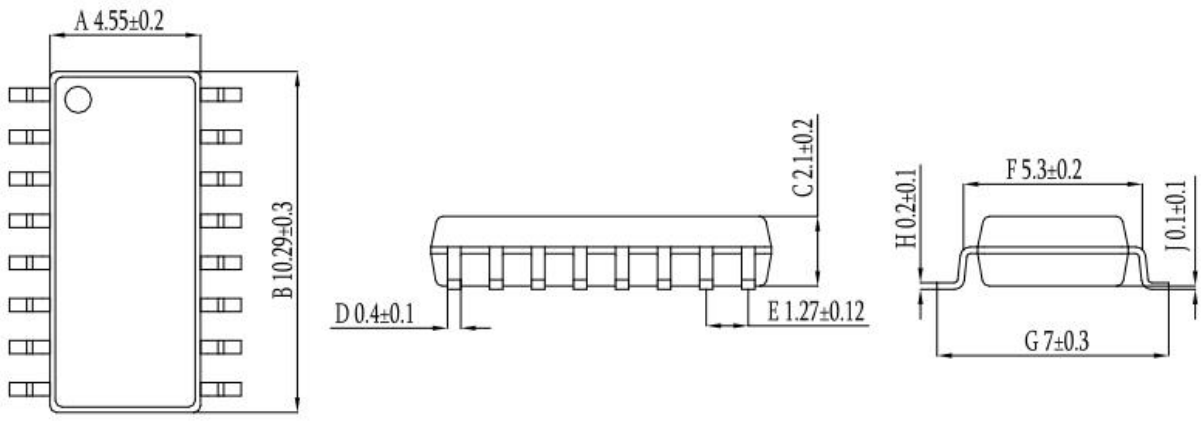


Fig.10 Switching Time Test Circuit & Waveforms

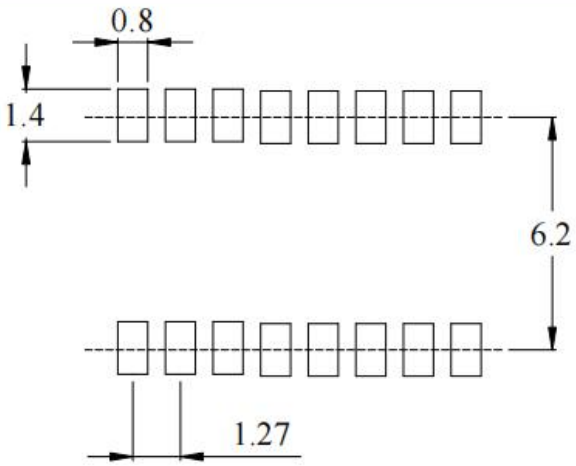


Package Outline Dimensions (unit: mm)

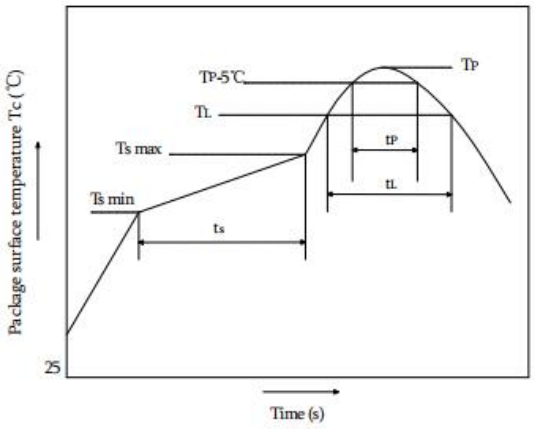
SSOP16



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

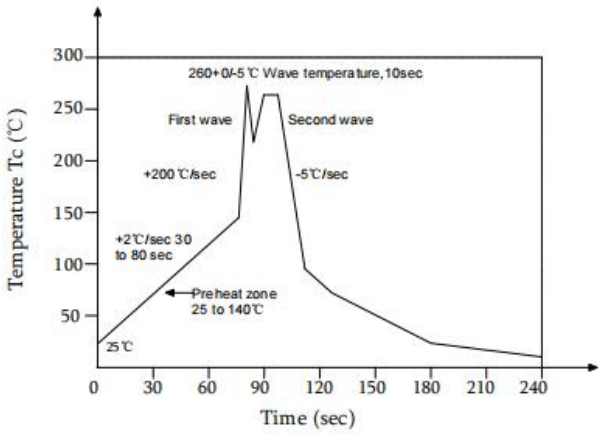


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up rate(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

Note:

Reflow soldering is recommended at the temperatures and times shown, no more than three times.

Wave soldering



Profile feature	
Average ramp-up rate	~200℃/s
Heating rate during preheat	1℃/s to 2℃/s typical;4℃/s maximum
Final preheat temperature Ts	~130℃
Preheat time (25℃ to Ts)	>60s
Peak temperature Tp	260℃
Time within peak temperature tp	10s
Ramp-down rate	5℃/s maximum

Soldering with hand soldering iron

A. Hand soldering iron is only used for product rework or sample testing.

B. Hand soldering iron requirements:Temperature:360 °C+5°C within 3s.

Packing

Package Type	Packing Form	Quantity per Tube &Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
SSOP16	Reel(ϕ330mm)	2000 pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Leave 25 Spaces at the beginning and 50 Spaces at the end

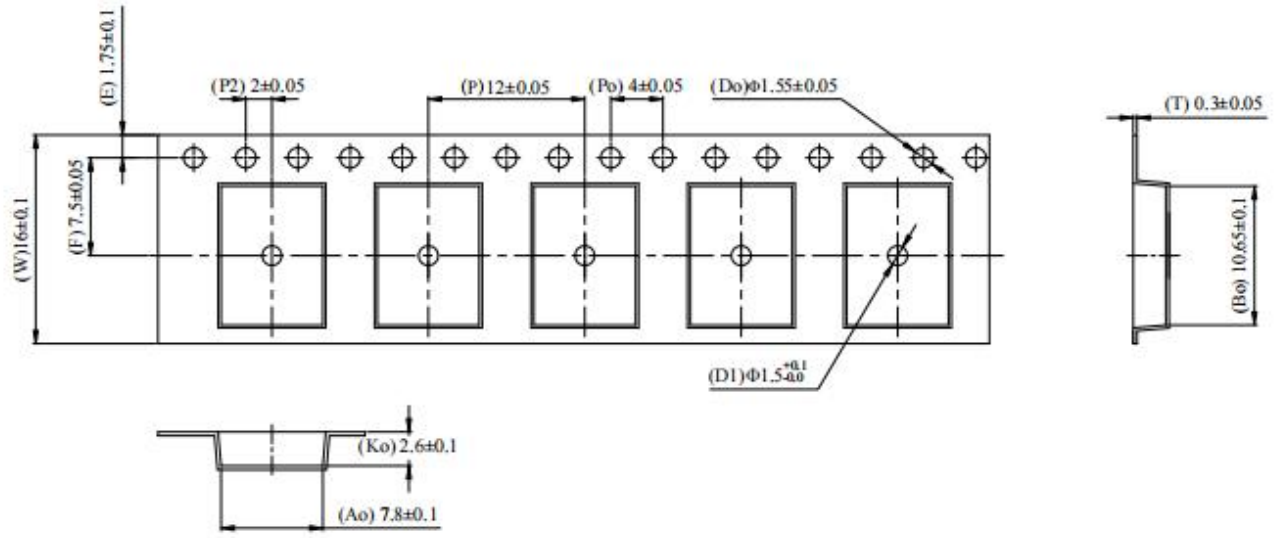
■Summary table

■SSOP16 （Reel）

Qty/reel：2000 pcs. Qty/box：4000 pcs.

Qty/ctn ：20000 pcs.

Schematic：(unit:mm)



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