Features

HF

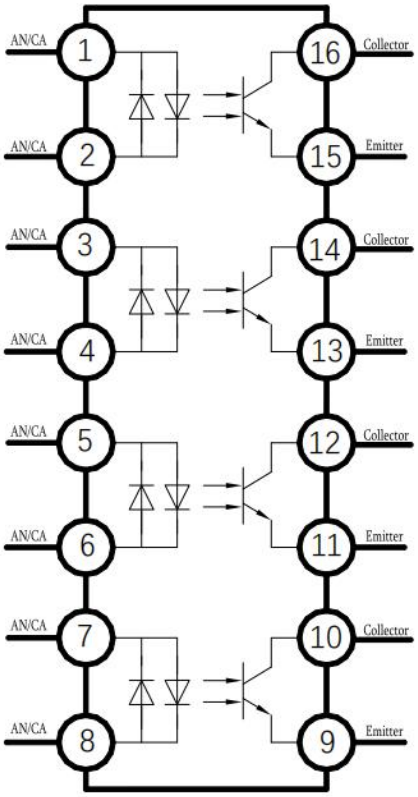
- Current transfer ratio
  (CTR: 50~300% at I_F =±1mA, V_{CE} = 5V)
- High isolation voltage between input and output (Viso =3750V rms)
- Collector - emitter breakdown voltage BV_{CEO} ≥ 80V
- Operating Temperature: -55°C~100°C

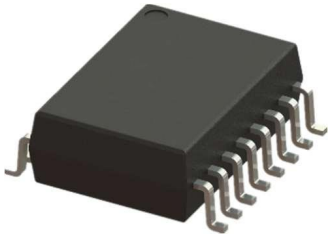
Applications

- Switching power supply, intelligent meter
- Industrial control, measuring instruments
- Office equipment such as copiers
- Household appliances: such as air conditioners, fans, water heaters, etc.

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 Q3H4 (M) (G) - (U) (N) (Y)

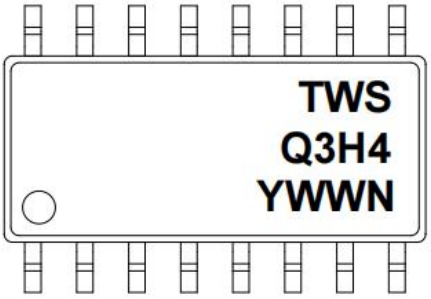
① ② ③ ④ ⑤ ⑥ ⑦

① Brand(TWS)
② Product series(Q3H4)
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
TWSQ3H4	SSOP16	2000 pcs / Tape & Reel	TWSQ3H4

Marking Information

- "TWS" denotes brand.
- "Q3H4" 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
	Power Dissipation	P_D	70	mW
	Power dissipation Derating factor (above Ta = 100°C)	P_{DD}	2.9	mW/°C
	Thermal Resistance Junction-Ambient	Rth_{J-A}	325	°C/W
	Thermal Resistance Junction-Case	Rth_{J-C}	200	°C/W
Output	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}	500	mW
Isolation Voltage *1	V_{ISO}	3750	Vrms
Operating Temperature	T_{OPR}	-55 ~ +100	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°C
Soldering Temperature *2	T_{SOL}	260	°C

Notes:
1. 40 to 60% RH, AC for 1 minute
2. 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
	Terminal Capacitance	Ct	V=0,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=±1mA,V_{CE}=5V	50	-	300	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F=±20mA,I_C=1mA	-	0.1	0.2	V
	Isolation Resistance	R_{ISO}	DC500V,40~60%R.H	$5x10^{10}$	$1x10^{11}$	-	Ω
	Floating Capacitance	Cf	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off Frequency	Fc	V_{CE}=5V, I_C=2mA, R_L=100Ω, -3dB	-	80	-	kHz
	Rise Time	Tr	V_{CE}=2V, R_L= 100Ω I_C=2mA	-	-	18	μs
	Fall Time	Tf		-	-	18	

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

Fig.1 Relative Current Transfer Ratio vs Forward Current

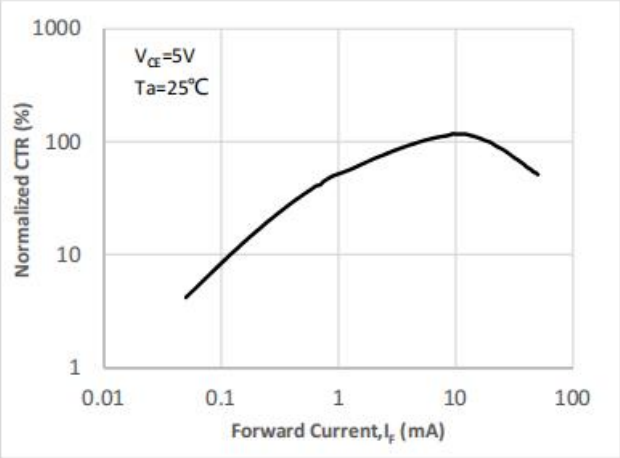


Fig.2 Forward Current vs Forward Voltage

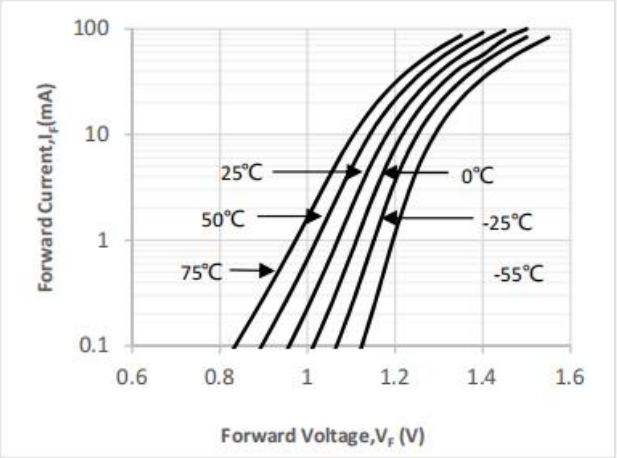


Fig.3 Collector Current vs Collector Emitter voltage

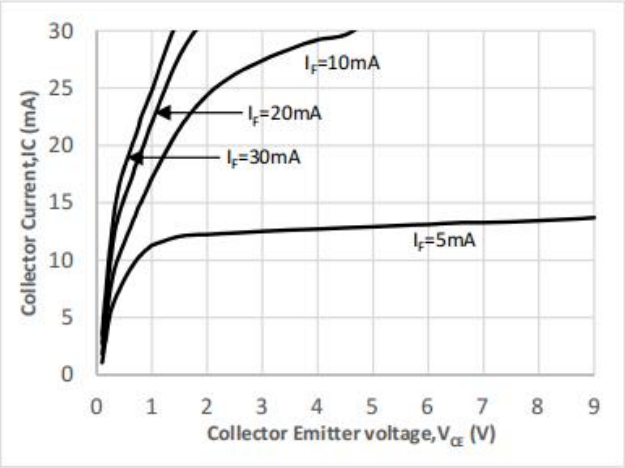


Fig4 Relative Current Transfer Ratio vs Ambient Temperature

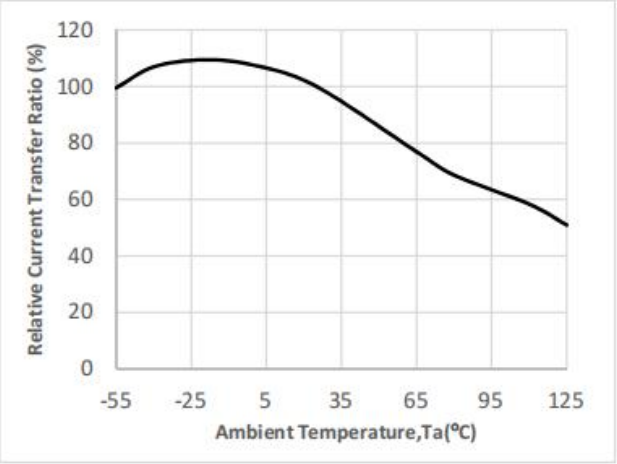


Fig.5 Collector-emitter saturation voltage vs. Ambient Temperature

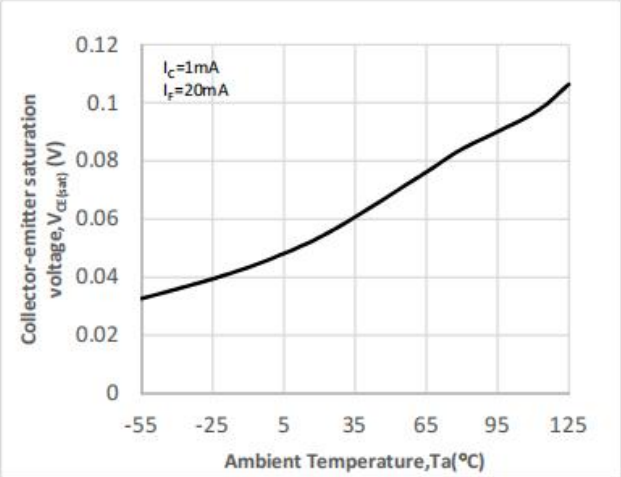


Fig.6 Collector Dark Current vs. Ambient Temperature

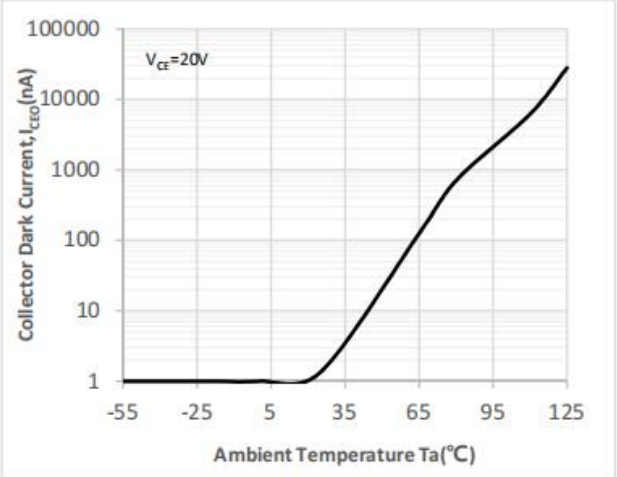


Fig.7 Response Time vs. Load Resistance

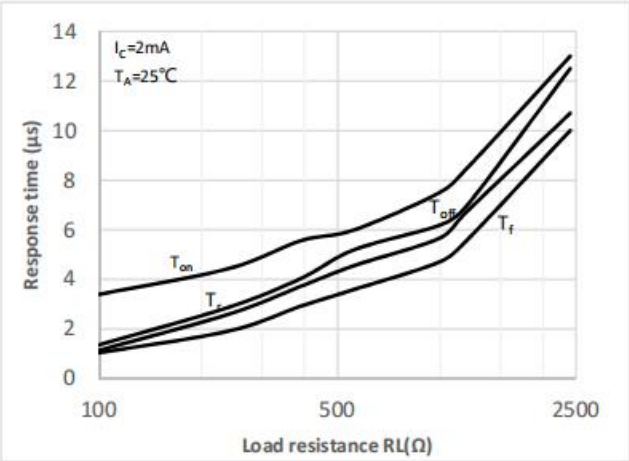


Fig.8 Frequency Response

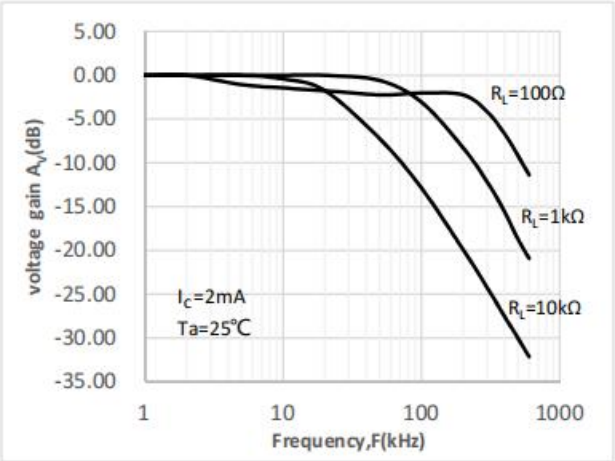


Fig.9 Collector-emitter Saturation Voltage vs. Forward Current

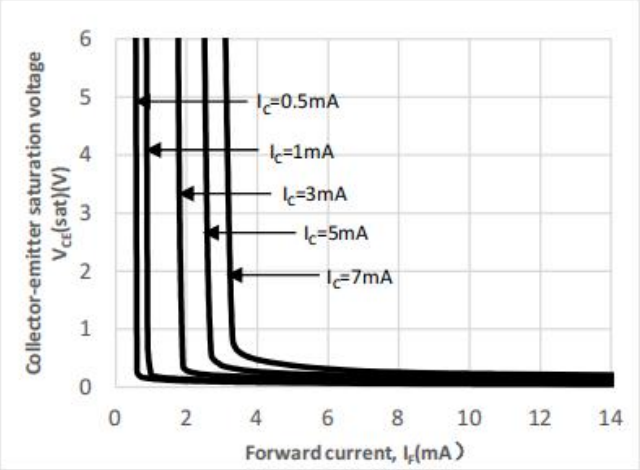
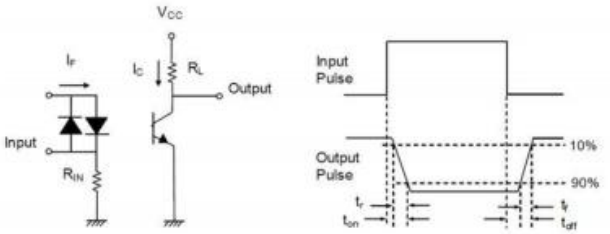
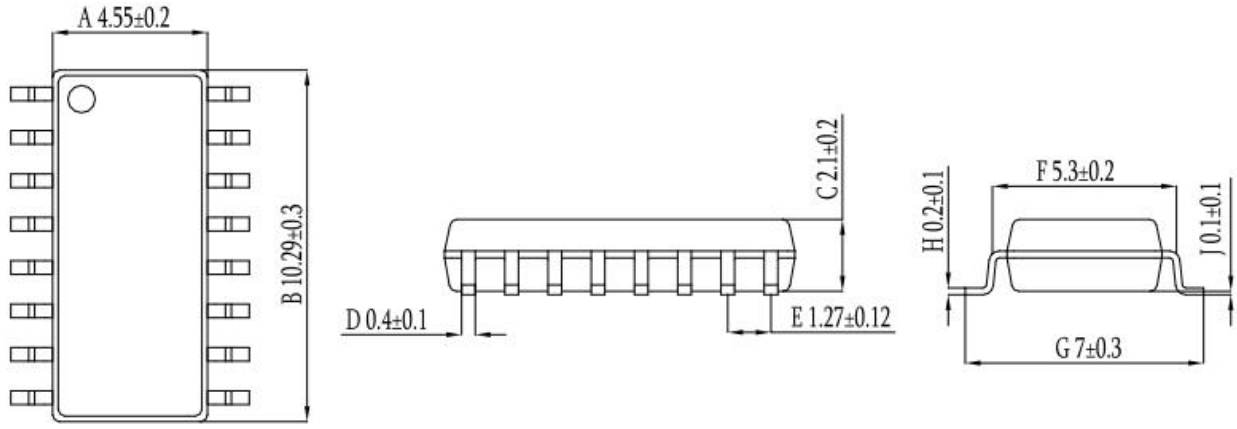


Fig.10 Switching Time Test Circuit & Waveforms

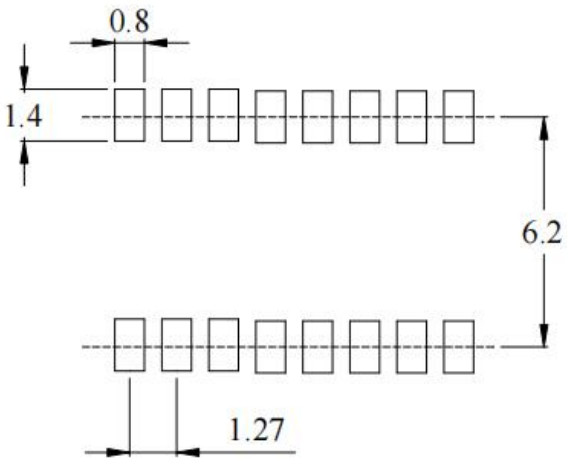


Package Outline Dimensions (unit: mm)

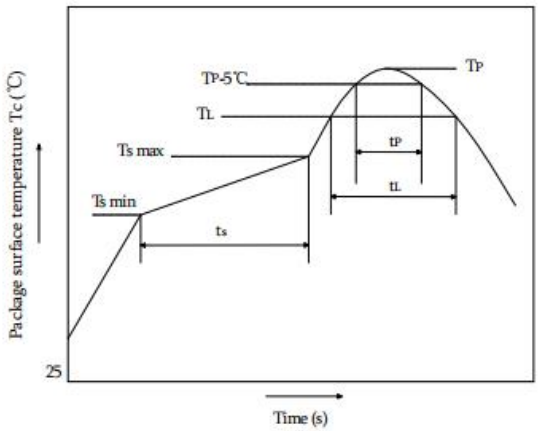
SSOP16



SOLDERING FOOTPRINT (unit: mm)



Reflow soldering

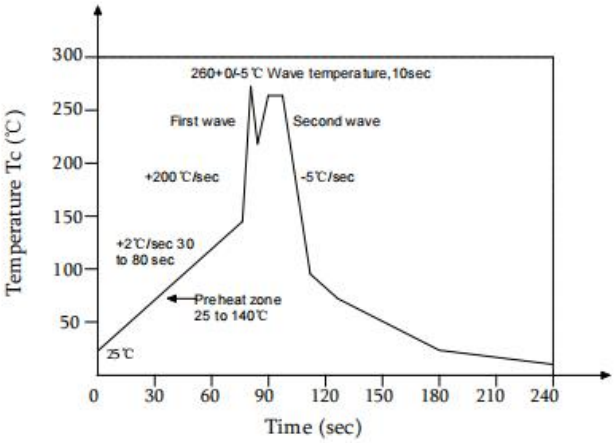


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up rate(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

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 ℃+5℃ 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

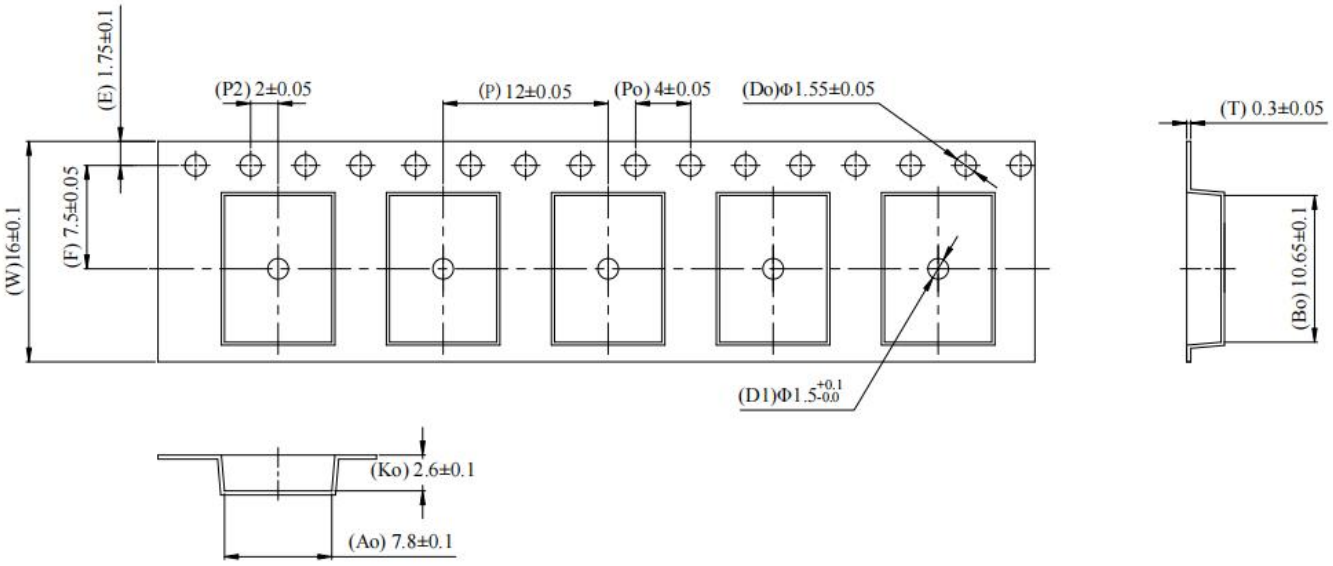
■Summary table

■SSOP16 （Reel）

Qty/reel：2000 pcs. Qty/box：4000 pcs.

Qty/ctn ： 20000 pcs.

Schematic：(unit:mm)



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