

1.Description

The UMW EL357 series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic SOP4 package.

With the robust coplanar double mold structure, UMW EL357 series provide the most stable isolation feature.

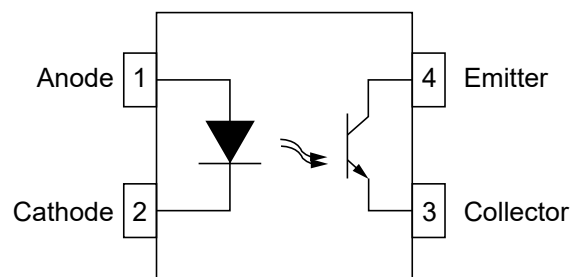
2.Applications

- Switch mode power supplies
- Programmable controllers
- Household appliances
- Office equipment

3.Features

- High isolation 3750 VRMS
- CTR flexibility available see order information
- DC input with transistor output
- Operating temperature range - 55°C to 110°C
- REACH compliance
- Halogen free
- MSL class 1
- UL Recognized: UL1577, File No.E547318

4.Pinning information



SOP-4



5. Absolute Maximum Ratings

Parameter	Symbol	Value	Unit	Note
INPUT				
Forward Current	I_F	60	mA	
Peak Forward Current	I_{FP}	1	A	1
Reverse Voltage	V_R	6	V	
Power Dissipation	P_I	100	mW	
OUTPUT				
Collector - Emitter Voltage	V_{CEO}	80	V	
Emitter -Collector Voltage	V_{ECO}	7	V	
Collector Current	I_C	50	mA	
Output Power Dissipation	P_O	150	mW	
COMMON				
Total Power Dissipation	P_{TOT}	200	mW	
Isolation Voltage	V_{ISO}	3750	Vrms	2
Operating Temperature	T_{OPR}	-55 to 110	°C	
Storage Temperature	T_{STG}	-55 to 125	°C	
Soldering Temperature	T_{SOL}	260	°C	

Note 1. 100μs pulse, 100Hz frequency

Note 2. AC For 1 Minute, R.H. = 40 ~ 60%



6. Electrical Characteristics

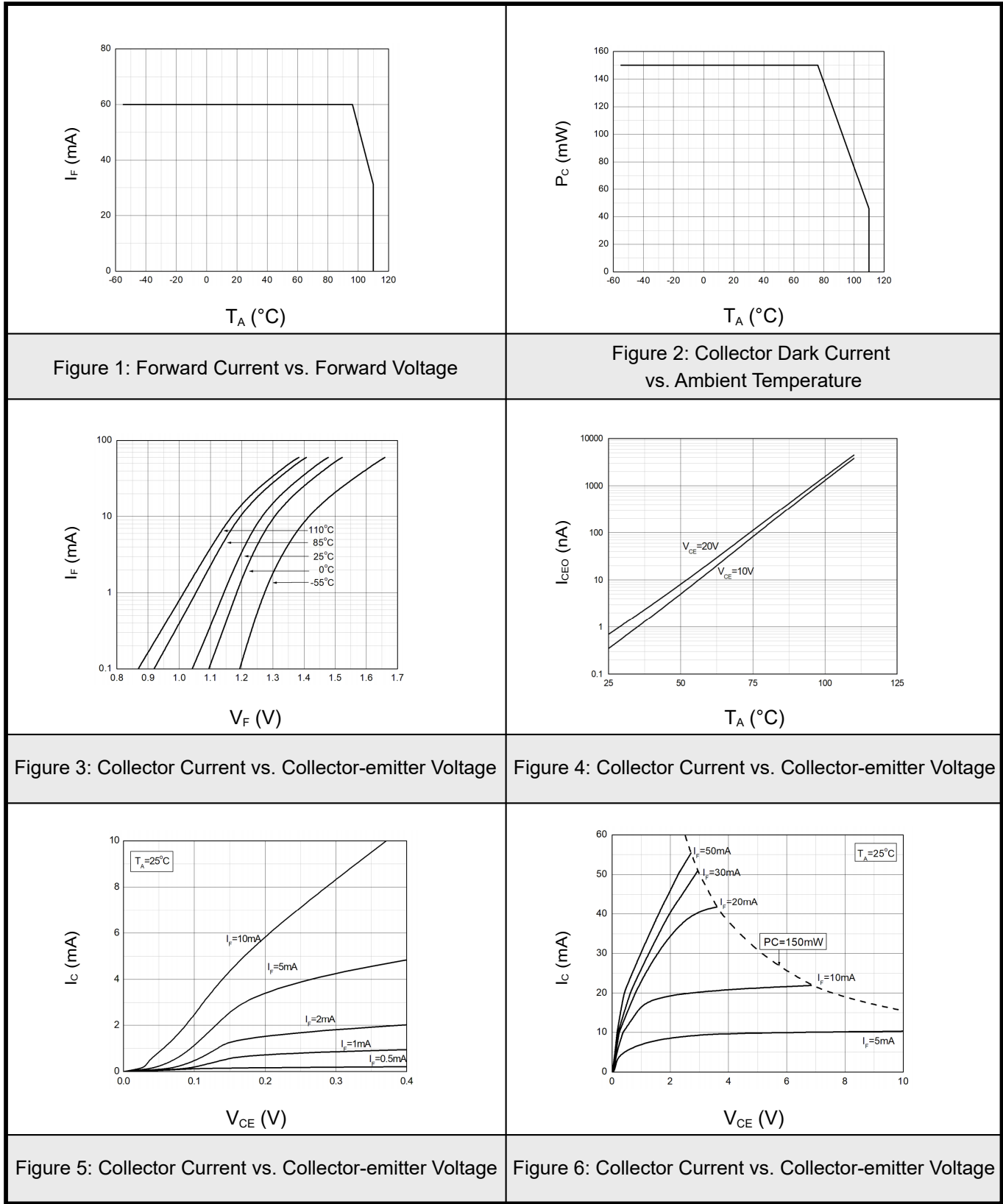
Parameter		Symbol	Conditions	Min	Typ	Max	Units
INPUT							
Forward Voltage		V_F	$I_F=10\text{mA}$		1.24	1.4	V
Reverse Current		I_R	$V_R=6\text{V}$			10	μA
Input Capacitance		C_{IN}	$V=0, f=1\text{kHz}$		10		pF
OUTPUT							
Collector Dark Current		I_{CEO}	$V_{CE}=20\text{V}, I_F=0$			100	nA
Collector-Emitter Breakdown Voltage		BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	80			V
Emitter-Collector Breakdown Voltage		BV_{ECO}	$I_E=0.1\text{mA}, I_F=0$	7			V
TRANSFER CHARACTERISTICS							
Current Transfer Ratio	UMW EL357	CTR	$I_F=5\text{mA}, V_{CE}=5\text{V}$	50		600	%
	UMW EL357A			80		160	
	UMW EL357B			130		260	
	UMW EL357C			200		400	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$		0.06		V
Isolation Resistance		R_{ISO}	DC500V, 40 ~ 60% R.H.	10^{12}	10^{14}		Ω
Floating Capacitance		C_{IO}	$V=0, f=1\text{kHz}$		0.4	1	pF
Cut-off Frequency (Note4)		F_C	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$		80		kHz
Response Time (Rise) (Note3)		T_r	$V_{CE}=2\text{V}, I_C=2\text{mA}$ $R_L=100\Omega$		3	18	μs
Response Time (Fall) (Note3)		T_f			4	18	μs

Note 3. Fig.12&13

Note 4. Fig.14



7.1Typical Characteristic





7.2Typical Characteristic

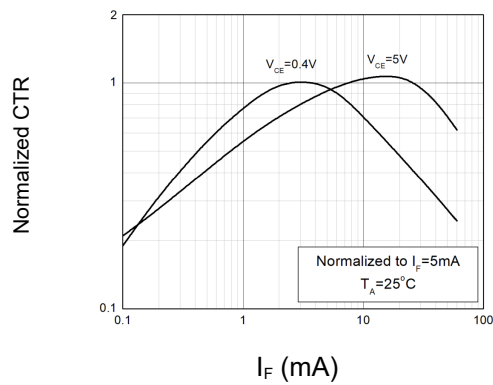


Figure 7: Normalized Current Transfer Ratio vs. Forward Current

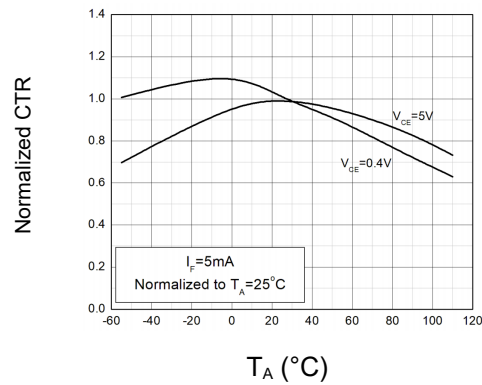


Figure 8: Normalized Current Transfer Ratio vs. Ambient Temperature

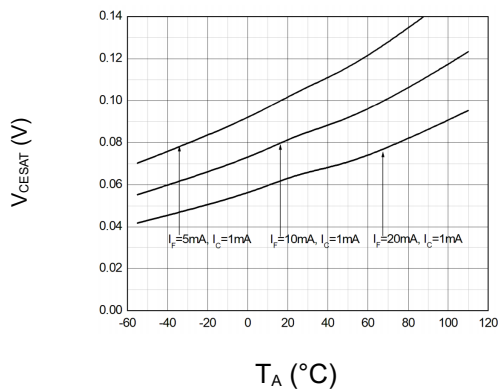


Figure 9: Collector-emitter Saturation Voltage vs. Ambient Temperature

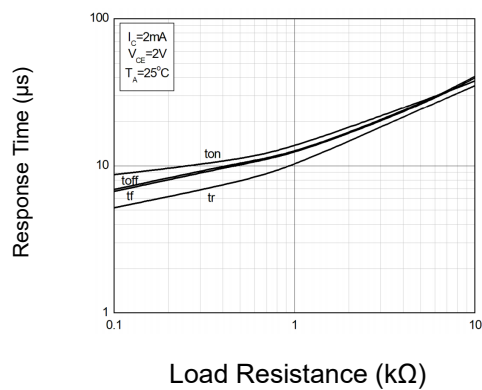


Figure 10: Switching Time vs. Load Resistance

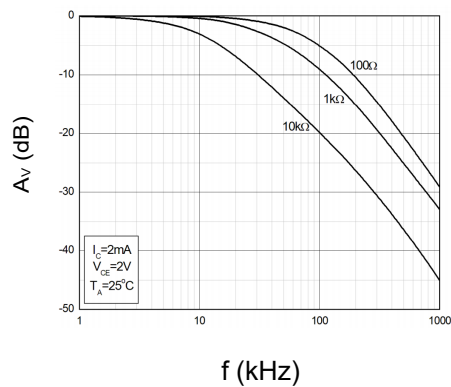


Figure 11: Frequency Response



8. Test Circuits

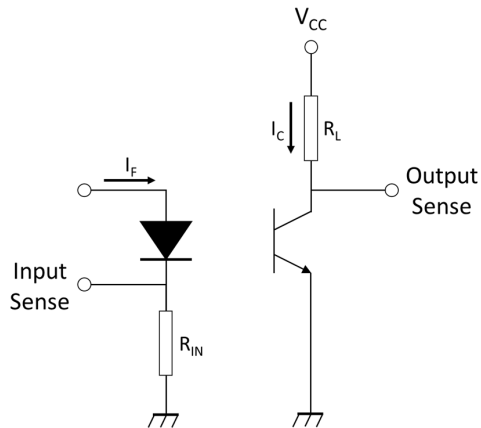


Figure 12: Test Circuits of Response Time

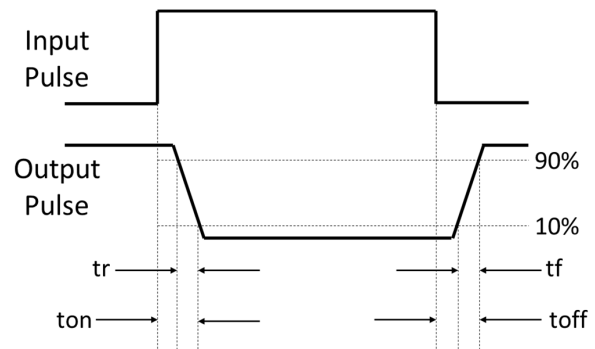


Figure 13: Curves of Response Time

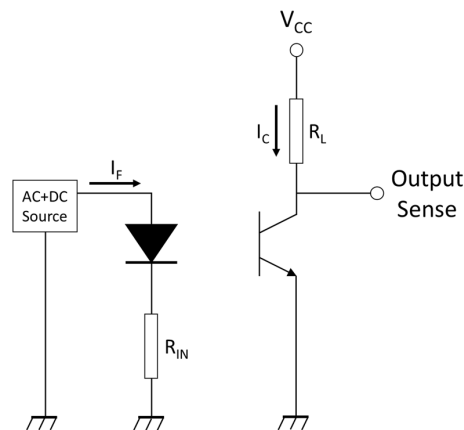
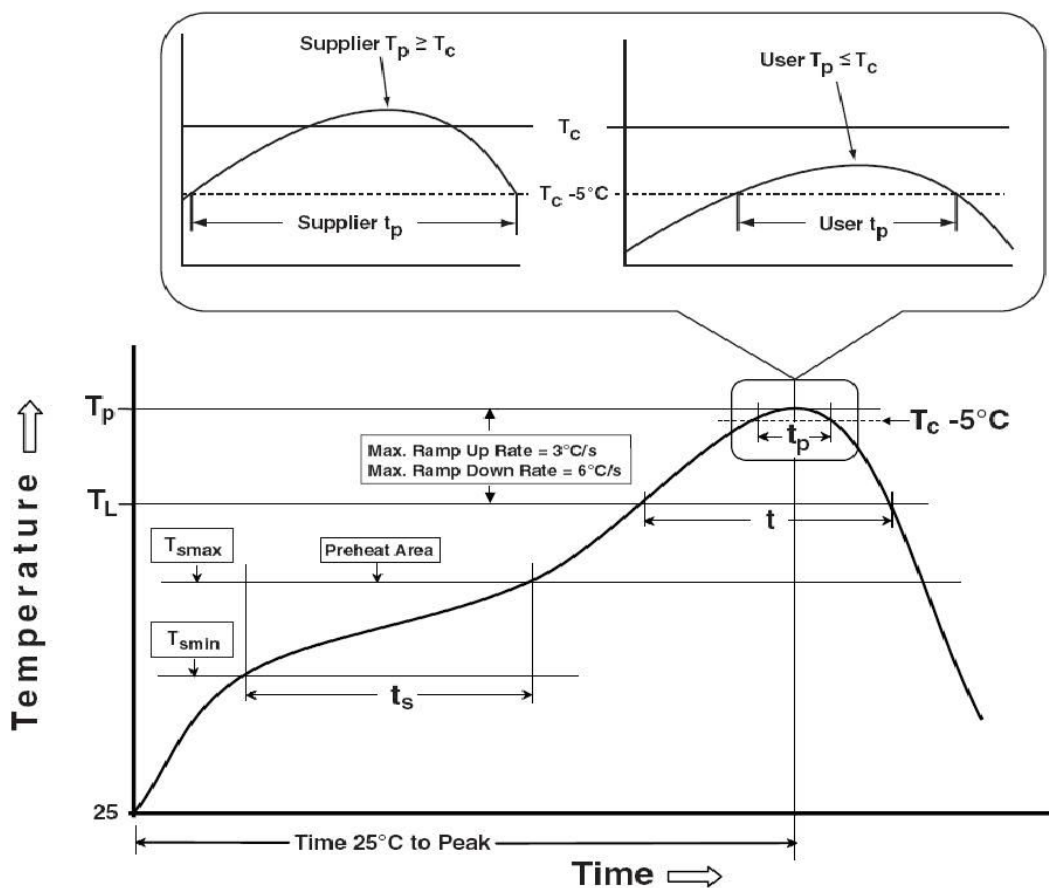


Figure 14: Test Circuits of Frequency Response



9. Reflow Information

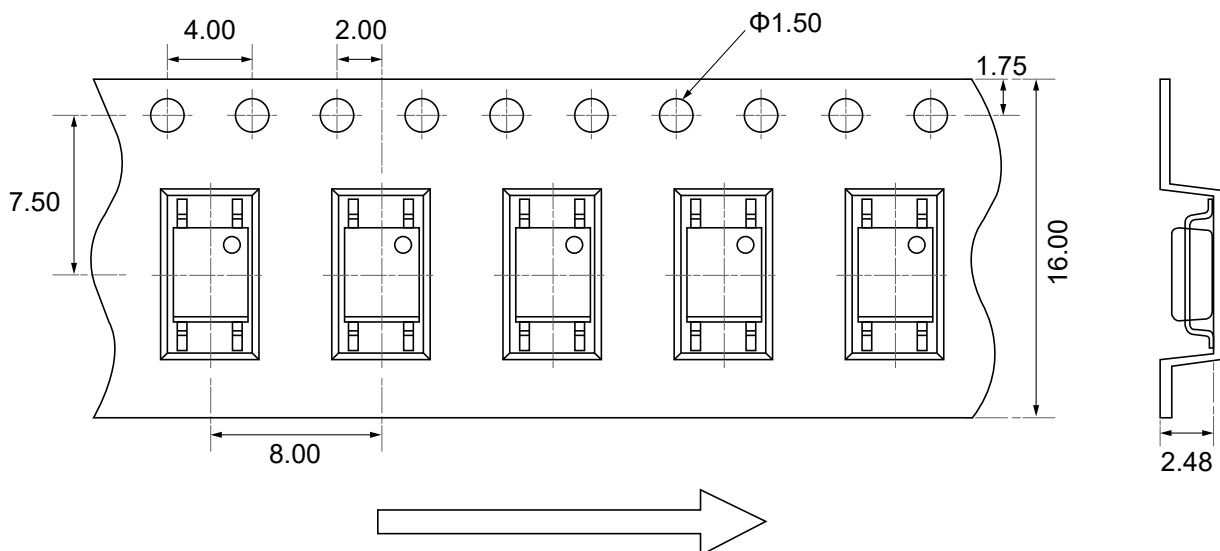
REFLOW PROFILE





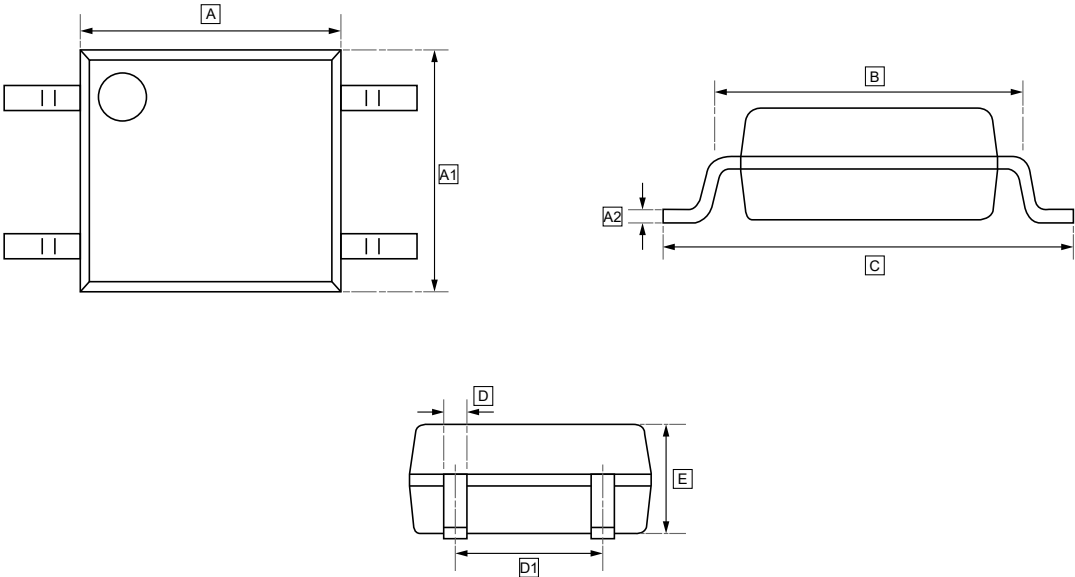
Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min.(T _{min})	100	150°C
Temperature Max.(T _{max})	150	200°C
Time (ts) from (T _{min} to T _{max})	60-120 seconds	60-120 seconds
Ramp-up Rate (t _L to t _P)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (t _L) Maintained Above (TL)	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235°C +0°C/-5°C	260°C +0°C/-5°C
Time (t _P) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6minutes max.	8 minutes max.

10.Taping Direction





11.SOP-4 Package Outline Dimensions

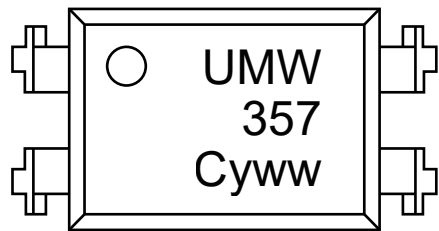


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	B	C	D	D1	E
Min	4.40	3.60	0.15	5.00	6.70	0.30	2.54	1.82
Max	4.80	4.10		5.40	7.30	0.50	TYP	2.02



12.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW EL357	SOP-4	3000	Tape and reel
UMW EL357A	SOP-4	3000	Tape and reel
UMW EL357B	SOP-4	3000	Tape and reel
UMW EL357C	SOP-4	3000	Tape and reel



13.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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