

1.Description

UMW TLP127GB-S is a small patch optocoupler product suitable for surface mount assembly.

UMW TLP127GB-S is a high-voltage optocoupler composed of gallium arsenide infrared light-emitting diodes and Darlington phototransistors with integrated base emitter resistors, with a VCEO of over 300V.

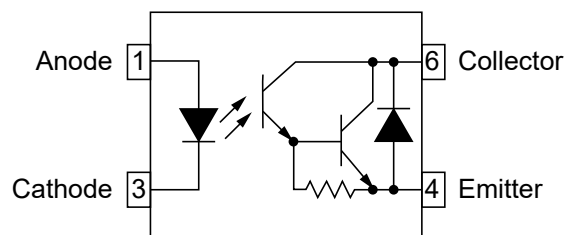
3.Features

- Collector-Emitter Voltage: 300V (Min.)
- Current Transfer Ratio: 1000% (Min.)
- Isolation Voltage: Viso=3750Vrms(min.)
- UL Recognized: UL1577,File NO.E547318
- RoHScompliance

2.Applications

- Switching power supply, intelligent instrument
- Industrial control, measuring instruments photocopiers and other office equipment
- Household appliances: such as air conditioners fans, water heaters, etc.

4.Pinning information



SOP-4



5.Limit parameter (Ta=25°C)

Parameter		Symbol	Value	Unit
LED	Forward Current	I_F	50	mA
	Forward Current Derating	$\Delta I_F/^\circ\text{C}$	-7(Ta $\geq$ 53°C)	mA/°C
	Pulse Forward Current	I_{FP}	1(100 μ s pulse,100pps)	A
	Reverse Voltage	V_R	6	V
	Junction Temperature	T_J	125	°C
DETECTOR	Collector-Emitter Voltage	V_{CEO}	300	V
	Emitter-Collector Voltage	V_{ECO}	0.3	V
	Collector Current	I_C	150	mA
	Collector Power Dissipation	P_C	150	mW
	Collector Power Dissipation Derating (Ta $\geq$ 25°C)	$\Delta P_C/^\circ\text{C}$	-1.5	mW/°C
	Junction Temperature	T_J	125	°C
Storage Temperature Range		T_{STG}	-55 to 125	°C
Operating Temperature Range		T_{OPR}	-55 to 110	°C
Lead Soldering Temperature		T_{SOL}	260(10s)	°C
Total Package Power Dissipation		P_T	200	mW
Total Package Power Dissipation Derating(Ta $\geq$ 25°C)		$\Delta P_T/^\circ\text{C}$	-2	mW/°C

Notes1: Device considered a two terminal device : Pins 1, 3 shorted together and pins 4,6 shorted together.



6. Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input						
Forward Voltage	V_F	$I_F=10\text{mA}$	1	1.15	1.3	V
Reverse Voltage	I_R	$V_R=5\text{V}$			10	μA
Terminal Capacitor	C_T	$V=0, f=1\text{kHz}$		30		pF
Output						
Collector Dark Current	I_{CEO}	$V_{CE}=200\text{V}$		10	200	nA
		$V_{CE}=200\text{V}, T_a=85^\circ\text{C}$			20	μA
Collector Emitter Breakdown Voltage		$I_C=0.1\text{mA}, I_F=0$	300			V
Emitter Collector Breakdown Voltage	$V_{(BR)ECO}$	$I_E=0.1\text{mA}, I_F=0$	0.3			V
Capacitor (Collector To Emitter)	C_{CE}	$V=0, f=1\text{MHz}$		12		pF

7. Coupling electrical characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Current transmission ratio(CTR)	I_C/I_F	$I_F=10\text{mA}, V_{CE}=1\text{V}$	1000	4000		%
Saturation current transfer ratio(CTR)	$I_C/I_{F(SAT)}$	$I_F=10\text{mA}, V_{CE}=1\text{V}$	500			%
Saturation pressure drop	$V_{CE(sat)}$	$I_C=10\text{mA}, I_F=1\text{mA}$			1	V
		$I_C=100\text{mA}, I_F=10\text{mA}$	0.3		1.2	V



8. Isolation characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Capacitor (input to output)	C_s	$V_s=0$, $f=1\text{MHz}$		0.8		pF
Isolation resistor	R_s	$V_s=500\text{V}$, R.H.≤ 60%	5×10^{10}	10^{14}		Ω
Isolation voltage	BV_s	AC, 1 minute	3750			Vrms
		AC, 1 second, in oil		5000		Vrms
		DC, 1 minute, in oil		5000		Vdc

9. Switch characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Rise time	t_r	$V_{CC}=10\text{V}$, $I_C=10\text{mA}$ $R_L=100\Omega$		40		μs
Descent time	t_f			15		μs
Open time	t_{on}			50		μs
Off time	t_{off}			15		μs
Open time	t_{ON}	$R_L=180\Omega$ (Fig.1) $V_{CC}=10\text{V}$, $I_F=16\text{mA}$		5		μs
Storage time	t_s			40		μs
Off time	t_{OFF}			80		μs

10. Recommended operating conditions

Parameter	Symbol	Min	Typ	Max	Units
Working voltage	V_{CC}			200	V
Forward current	I_F		16	25	mA
Output current	I_C			120	mA
Working temperature	T_{OPR}	-25		85	°C



11. Test circuit

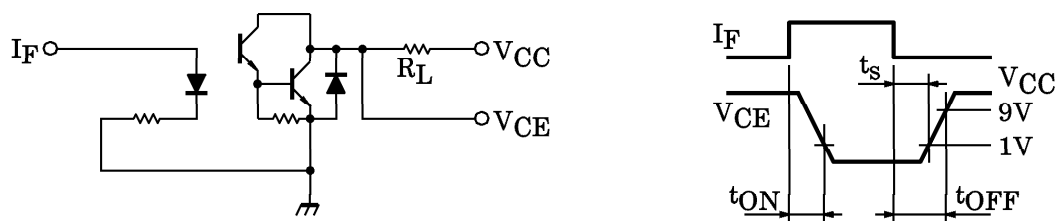
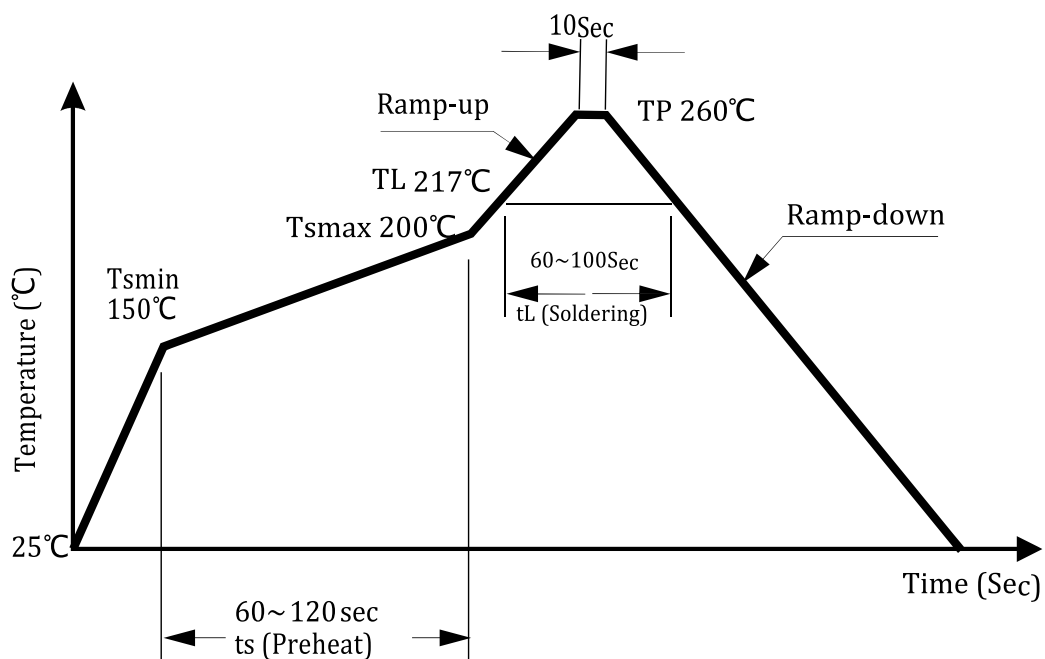


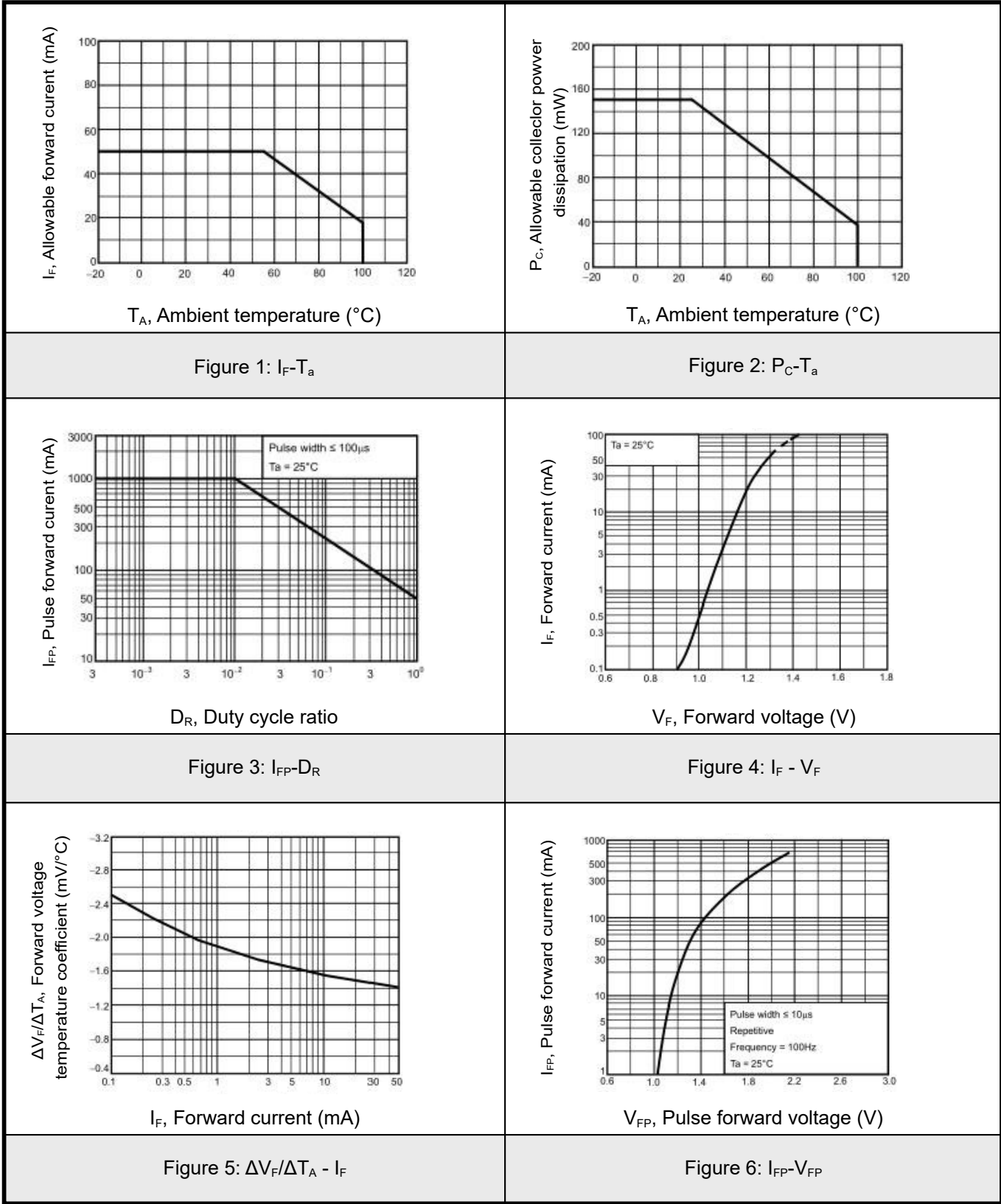
Fig.1 Switching Time Test Circuit

12. Reflow temperature curve



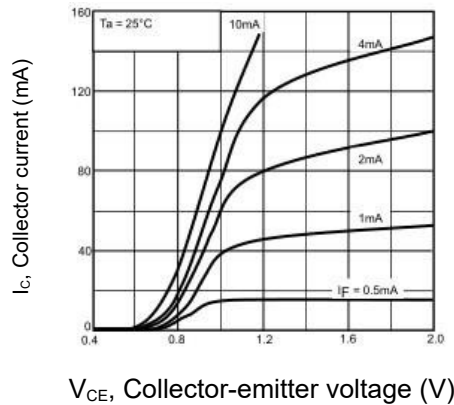
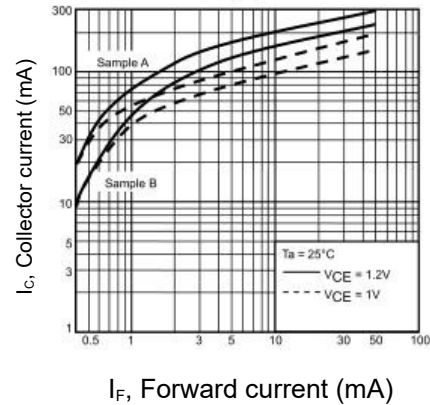
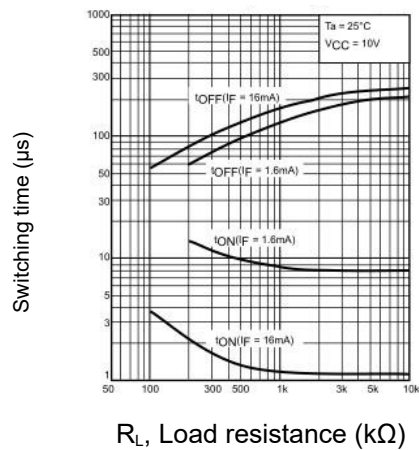
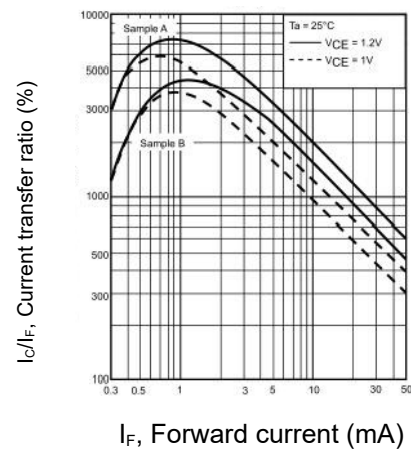
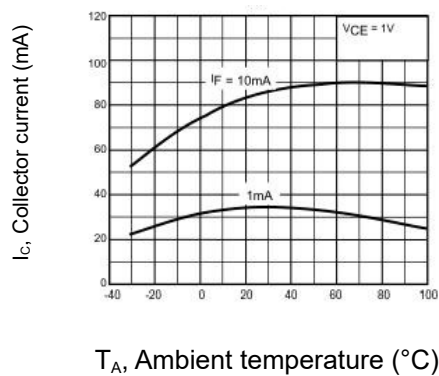
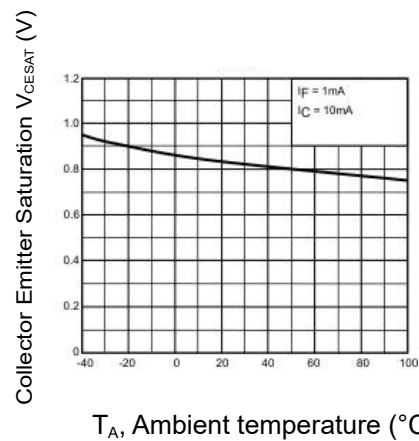


13.1Typical Characteristic





13.2 Typical Characteristic

Figure 7: $I_C - V_{CE}$ Figure 8: $I_C - I_F$ Figure 9: Switching Time - R_L Figure 10: $I_C/I_F - I_F$ Figure 11: $I_C - T_A$ Figure 12: $V_{CE(SAT)} - T_A$



13.3 Typical Characteristic

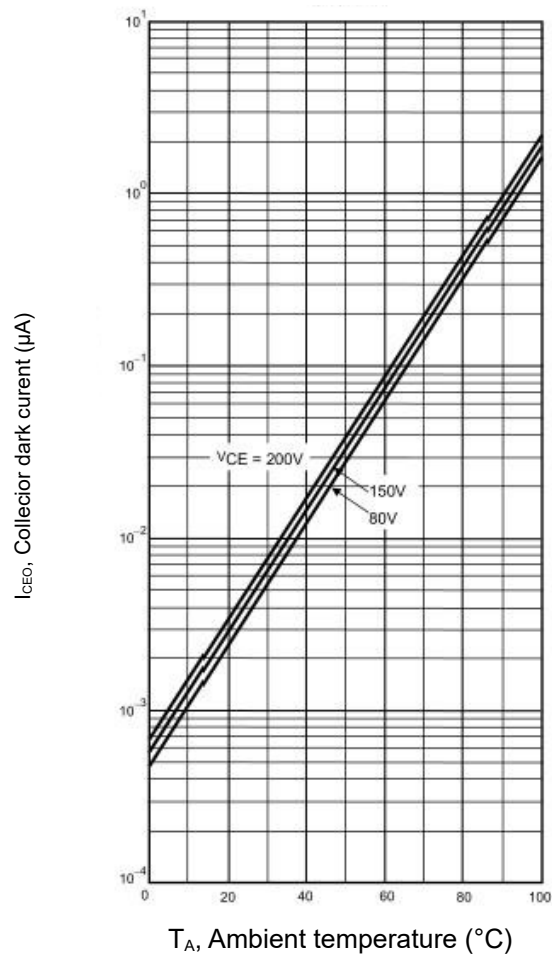
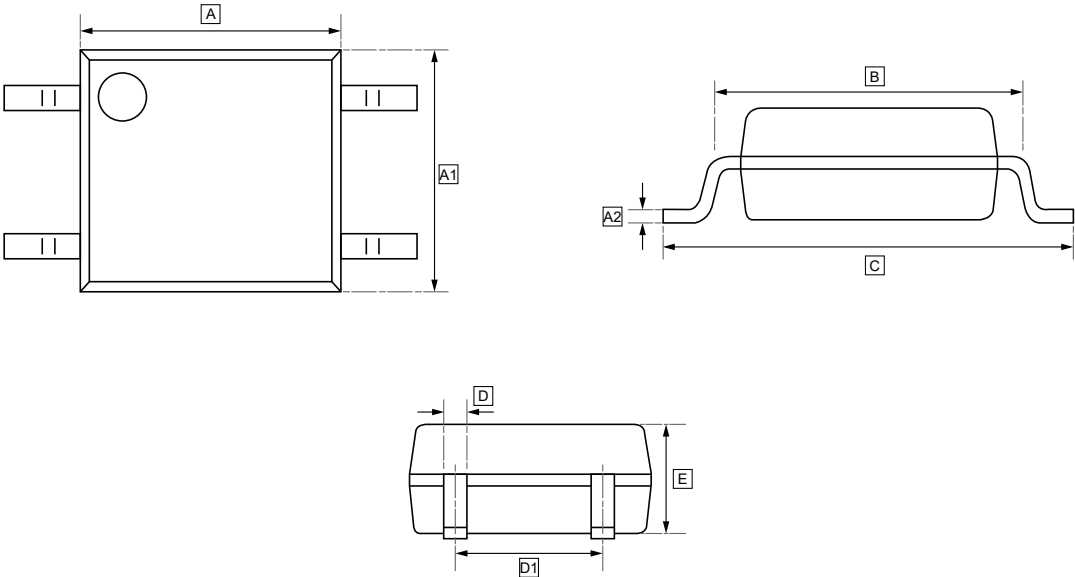


Figure 10: $I_{CEO} - T_a$



14.SOP-4 Package Outline Dimensions

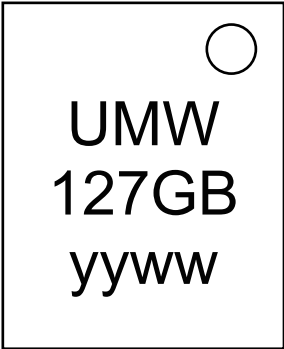


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	B	C	D	D1	E
Min	4.40	3.55	0.15	5.00	6.70	0.30	2.54	2.00
Max	4.80	3.95		5.40	7.30	0.50	TYP	2.20



15.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW TLP127GB-S	SOP-4	3000	Tape and reel



16.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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