UMW TLP127GB-S

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.

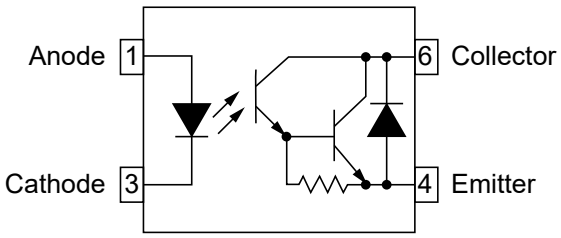
2.Applications

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

3.Features

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

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	ΔI_F/°C	-7(Ta≥53°C)	mA/°C
	Pulse Forward Current	I_{FP}	1(100μs 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≥25°C)	ΔP_C/°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≥25°C)		ΔP_T/°C	-2	mW/°C

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

6.Electrical Characteristics

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

7.Coupling electrical characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Current transmission ratio(CTR)	I_C/I_F	I_F=10mA, V_{CE}=1V	1000	4000		%
Saturation current transfer ratio(CTR)	$I_C/I_{F(SAT)}$	I_F=10mA, V_{CE}=1V	500			%
Saturation pressure drop	$V_{CE\ (sat)}$	I_C=10mA, I_F=1mA			1	V
		I_C=100mA, I_F=10mA	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 =1MHz		0.8		pF
Isolation resistor	R_S	V_S=500V, R.H.≤ 60%	$5x10^{10}$	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}=10V, I_C=10mA R_L=100Ω		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=180Ω (Fig.1) V_{CC}=10V, I_F=16mA		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

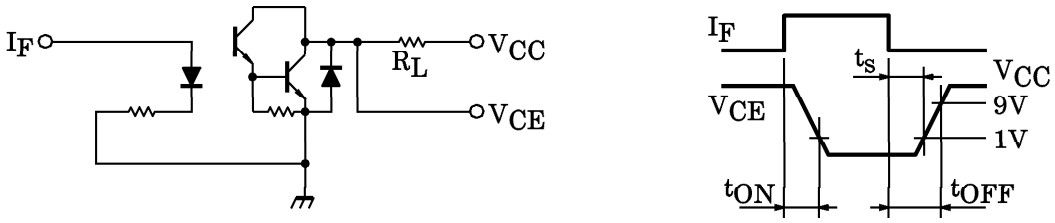
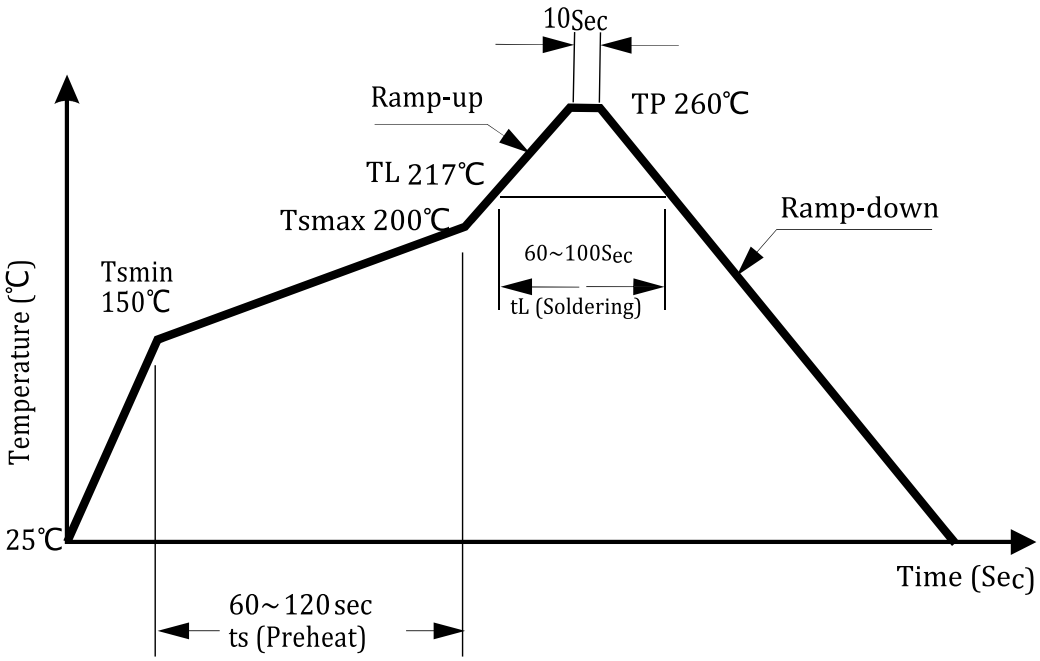
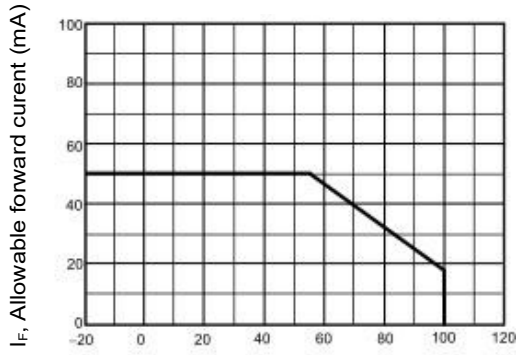


Fig.1 Switching Time Test Circuit

12.Reflow temperature curve

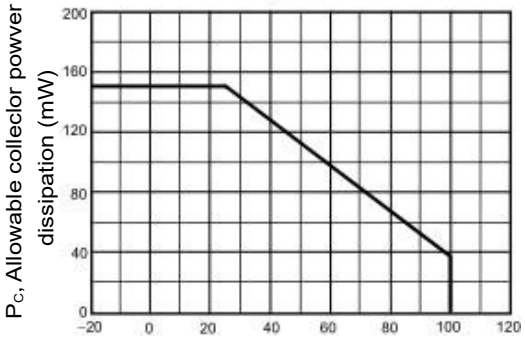


13.1Typical Characteristic



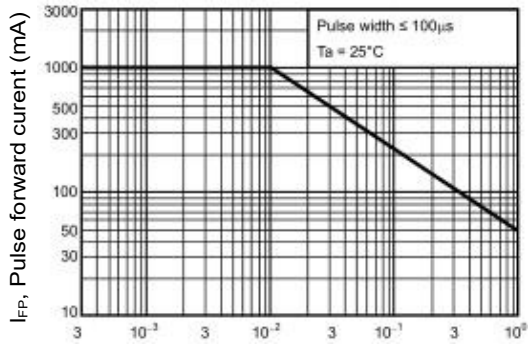
T_A, Ambient temperature (°C)

Figure 1: I_F-T_a



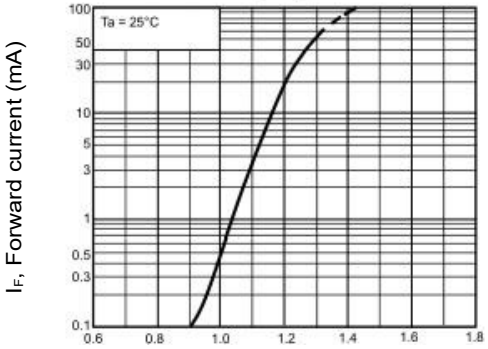
T_A, Ambient temperature (°C)

Figure 2: P_C-T_a



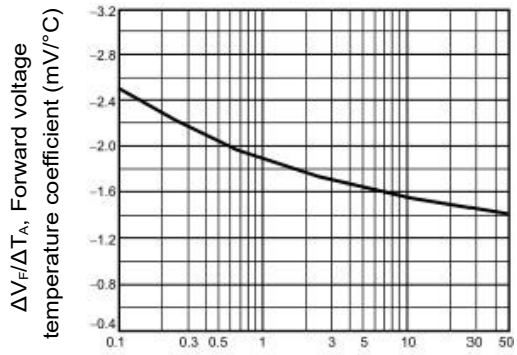
D_R, Duty cycle ratio

Figure 3: I_{FP}-D_R



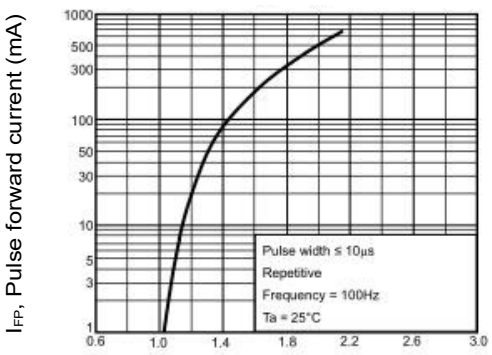
V_F, Forward voltage (V)

Figure 4: I_F - V_F



I_F, Forward current (mA)

Figure 5: $\Delta V_F/\Delta T_A$ - I_F



V_{FP}, Pulse forward voltage (V)

Figure 6: I_{FP}-V_{FP}

13.2Typical Characteristic

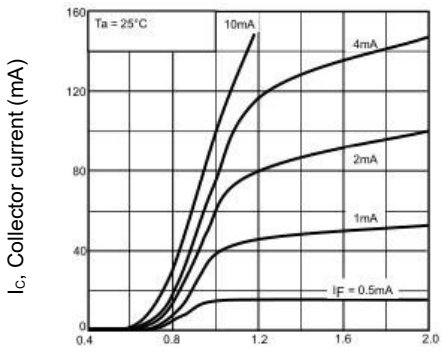


Figure 7: I_C - V_{CE}

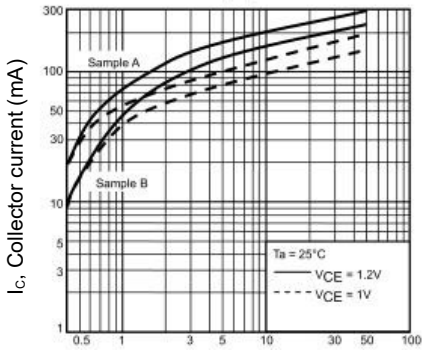


Figure 8: I_C - I_F

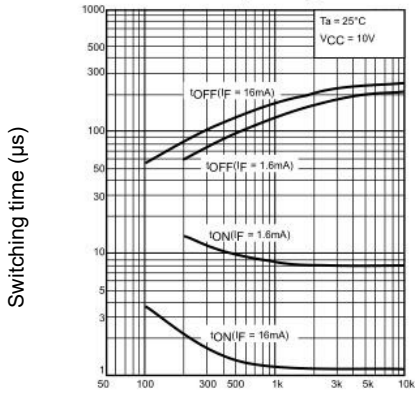


Figure 9: Switching Time -R_L

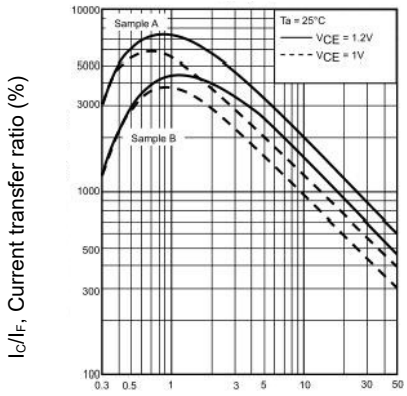


Figure 10: I_C/I_F - I_F

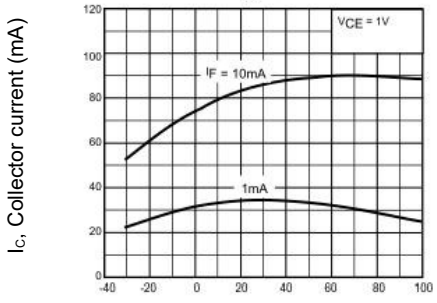


Figure 11: I_C - T_A

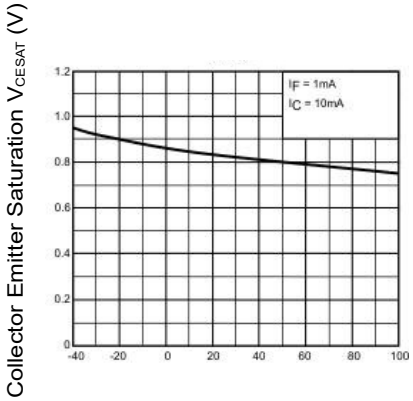


Figure 12: $V_{CE(SAT)}$-T_A

13.3Typical Characteristic

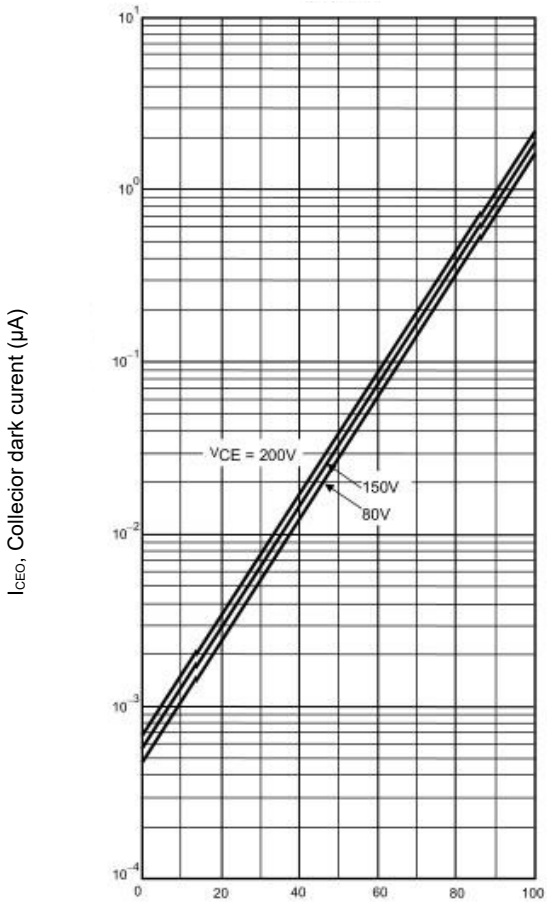
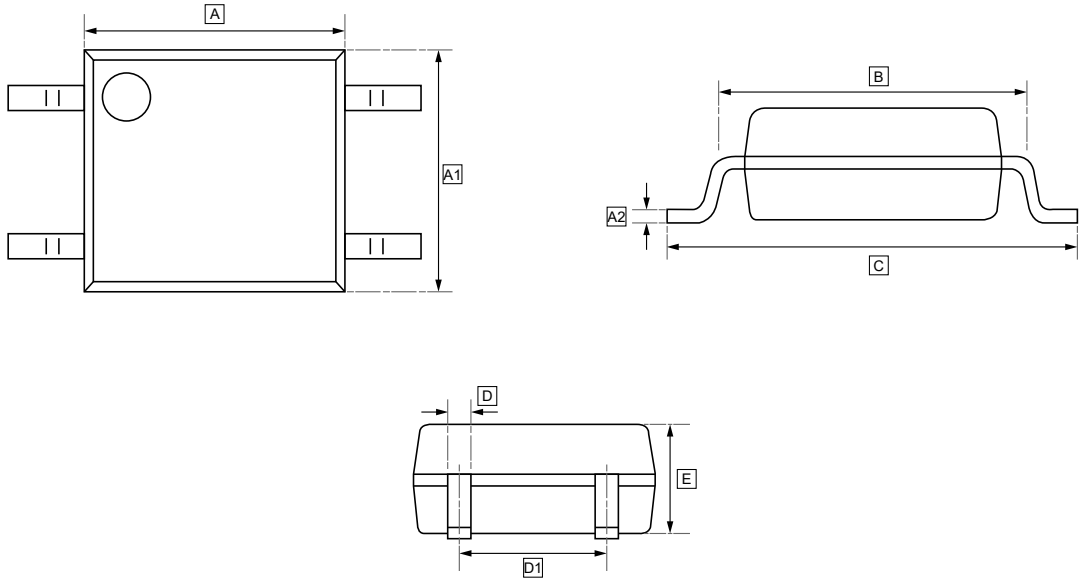


Figure 10: I_{CEO} - T_a

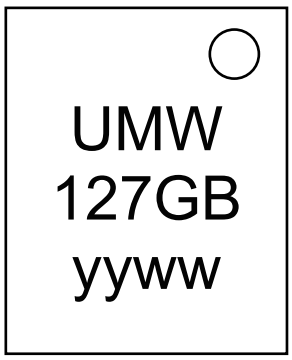
14.SOP-4 Package Outline Dimensions



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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