

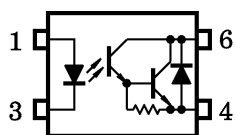
Description

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

Features

- Collector-Emitter Voltage : 300V (Min.)
- Current Transfer Ratio : 1000% (Min.)
- Isolation Voltage : $V_{iso}=3750 V_{rms}$ (min.)
- UL Recognized : UL1577,File NO. E492440
- RoHS compliance

Structural schematic and packaging



1 : ANODE
 3 : CATHODE
 4 : EMITTER
 6 : COLLECTOR

Application

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

Limit parameter(Ta=25°)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating	$\Delta I_F / ^\circ\text{C}$	-0.7 (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}	-55~125	°C
Operating Temperature Range		T_{opr}	-55~110	°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)		$\Delta P_T / ^\circ\text{C}$	-2.0	mW / °C

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

Photoelectric characteristics (Ta=25°C)

Parameter		Symbol	Condition	MIN	TYP	MAX	UNIT
Input	Forward voltage	V_F	$I_F=10\text{mA}$	1.0	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
			$V_{CE} = 200\text{ V, Ta} = 85^\circ\text{C}$	-	-	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

Coupling electrical characteristics (Ta=25°C)

Parameter	Symbol	Condition	MIN	TYP	MAX	UNIT
Current transmission ratio(CTR)	I_C/I_F	$I_F = 1\text{mA}, V_{CE} = 1\text{ V}$	1000	4000	-	%
Saturation current transfer ratio(CTR)	$I_C/I_{F(\text{SAT})}$	$I_F = 10\text{mA}, V_{CE} = 1\text{ V}$	500	-	-	%
Saturation pressure drop	$V_{CE(\text{sat})}$	$I_C=10\text{mA}, I_F=1\text{ mA}$	-	-	1.0	V
		$I_C=100\text{mA}, I_F=10\text{ mA}$	0.3		1.2	

Isolation characteristics (Ta=25°C)

Parameter	Symbol	Condition	MIN	TYP	MAX	UNIT
Capacitor (input to output)	C_S	$V_S = 0, f = 1\text{ MHz}$	-	0.8	-	pF
Isolation resistor	R_S	$V_S = 500\text{ V}, \text{R.H.} \leq 60\%$	$5 \times 10_{10}$	10^{14}	-	Ω
Isolation voltage	BV_S	AC, 1 minute	3750	-	-	Vrms
		AC, 1 second, in oil	-	5000	-	
		DC, 1 minute, in oil	-	5000	-	Vdc

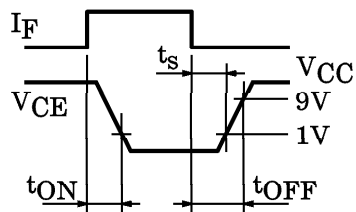
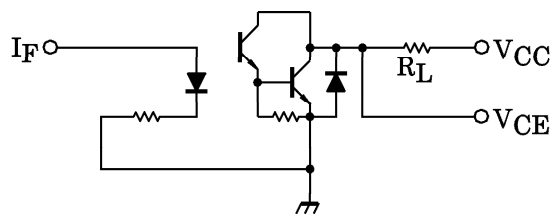
Switch characteristics (Ta=25°C)

Parameter	Symbol	Condition	MIN	TYP	MAX	UNIT
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	-	
Open time	t_{on}		-	50	-	
Off time	t_{off}		-	15	-	
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	-	
Off time	t_{OFF}		-	80	-	

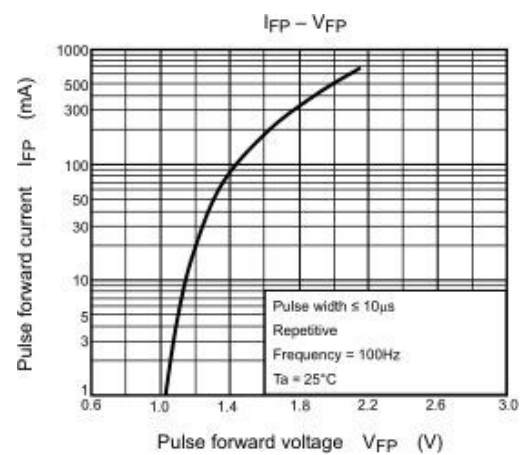
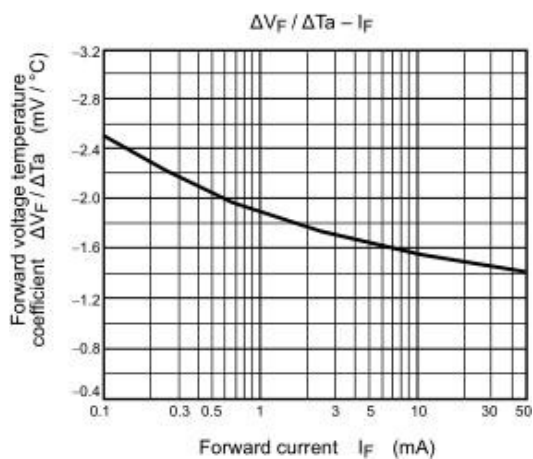
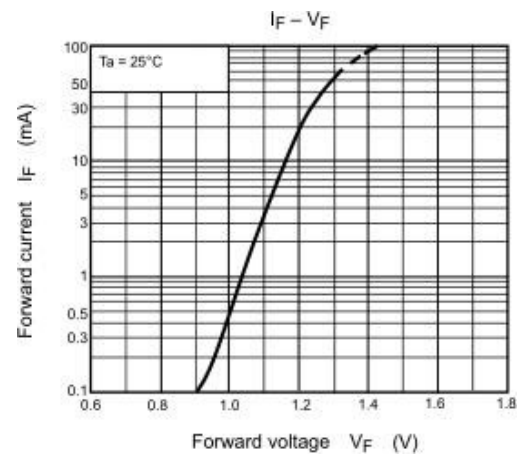
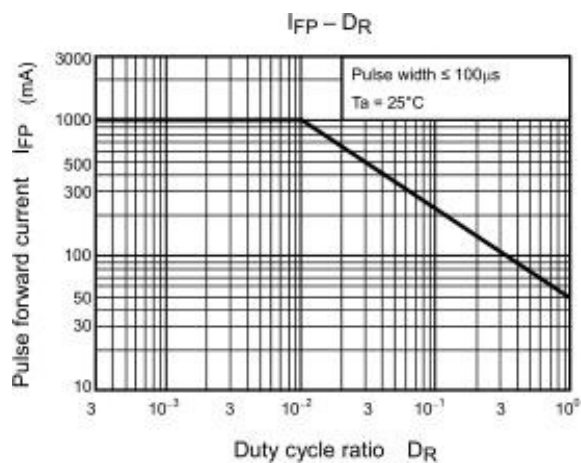
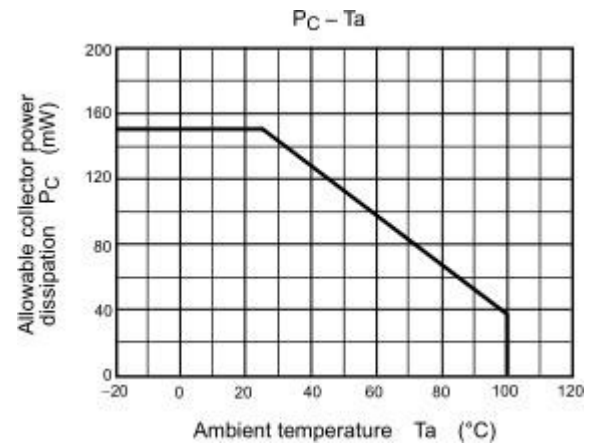
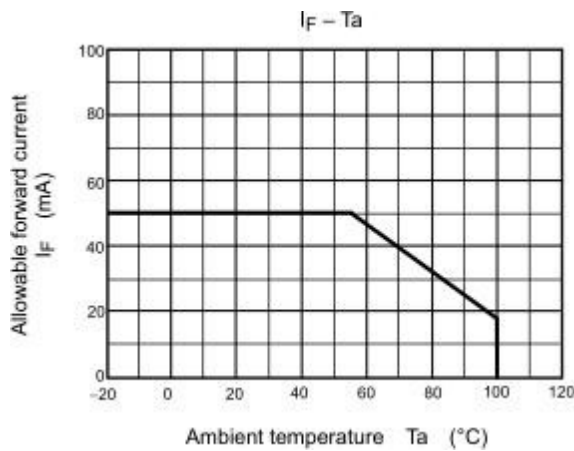
Recommended operating conditions

Parameter	Symbol	MIN	TYP	MAX	UNIT
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

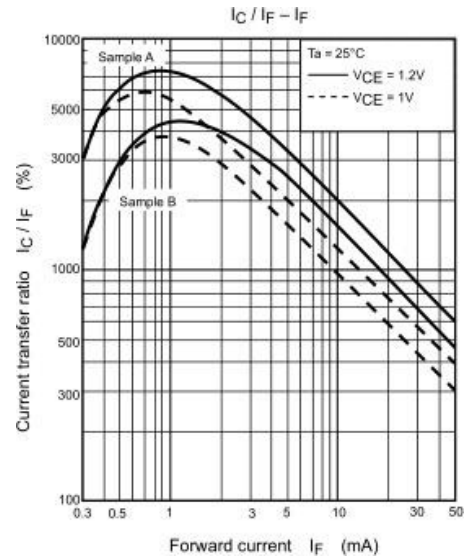
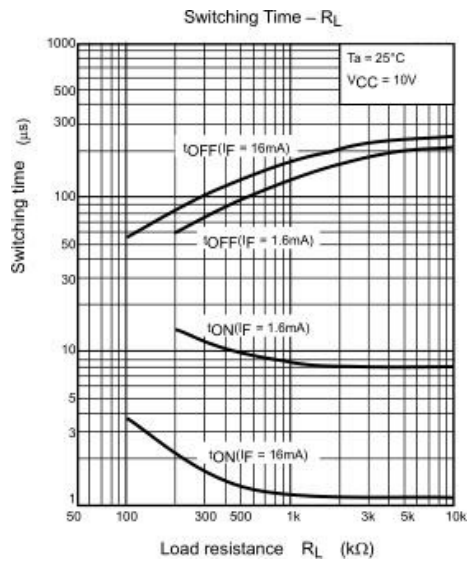
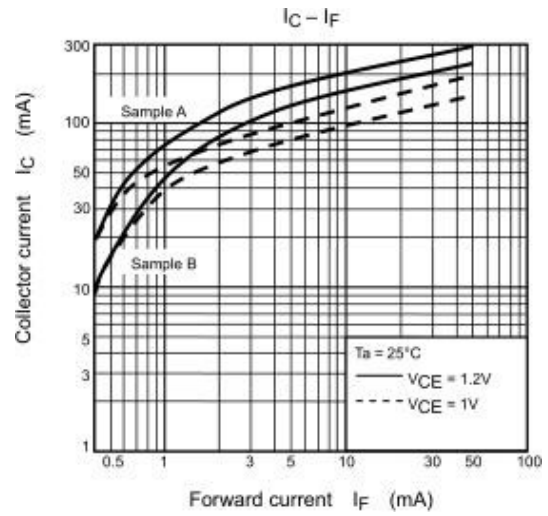
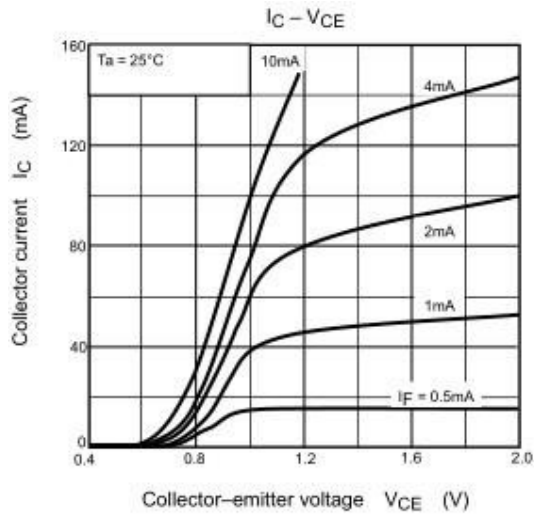
Fig.1 SWITCHING TIME TEST CIRCUIT



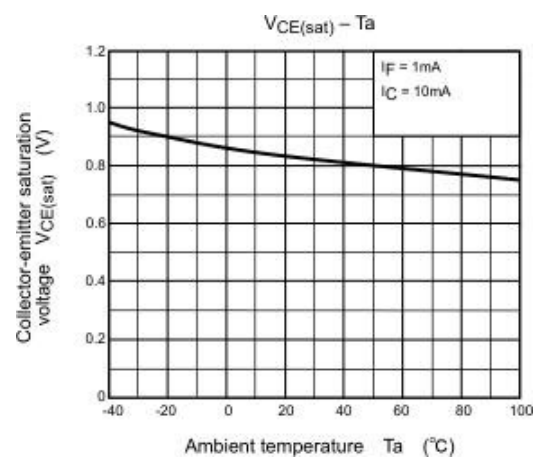
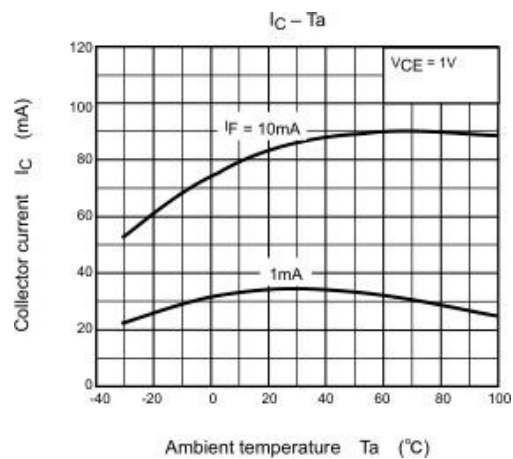
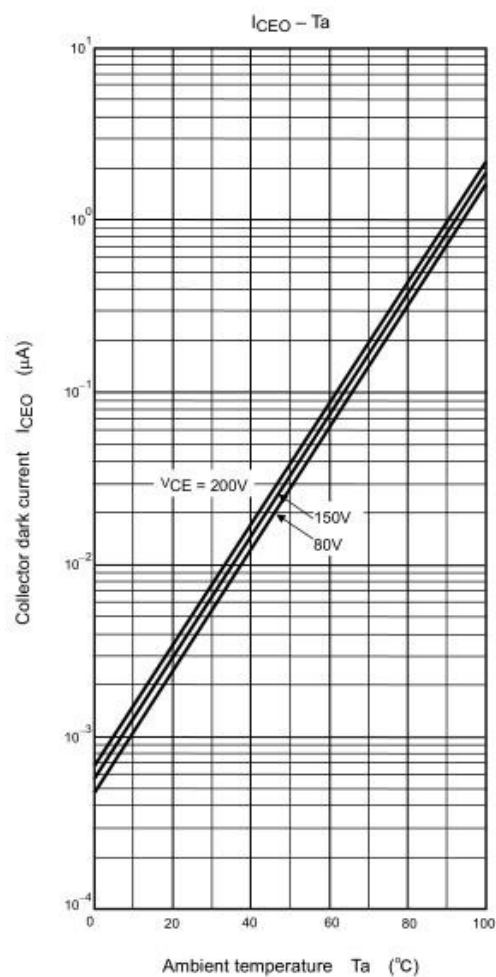
CHARACTERISTIC CURVES



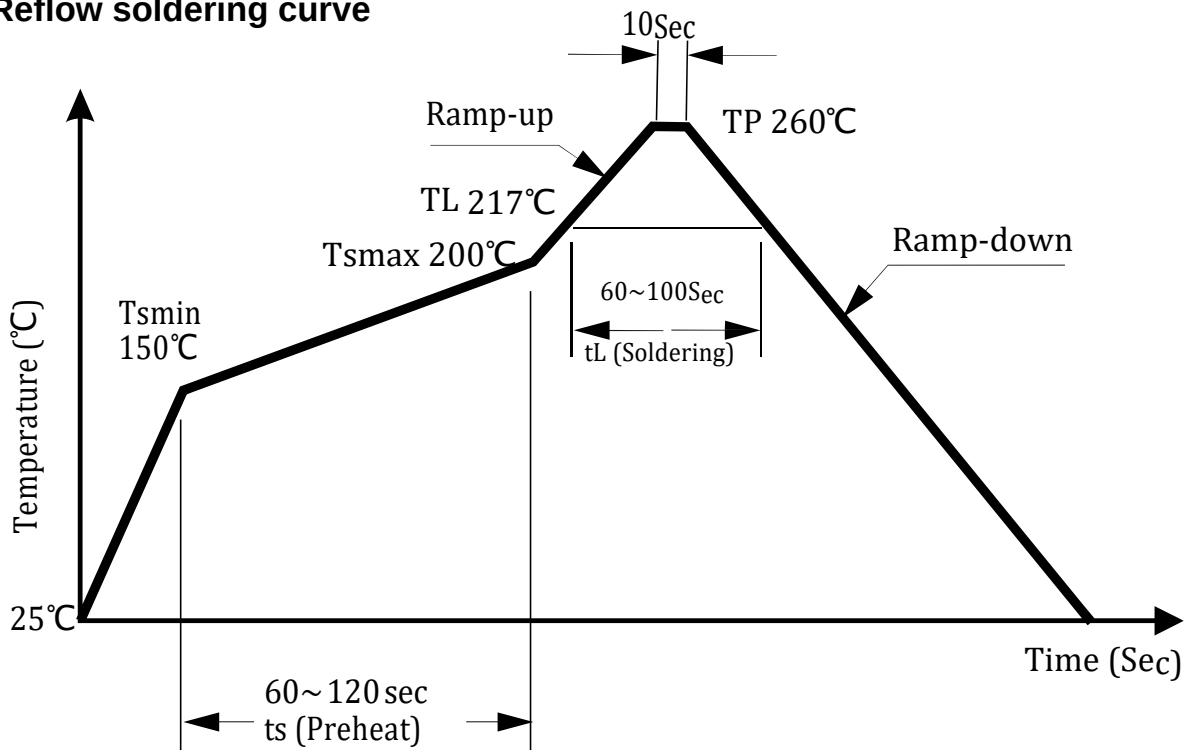
CHARACTERISTIC CURVES



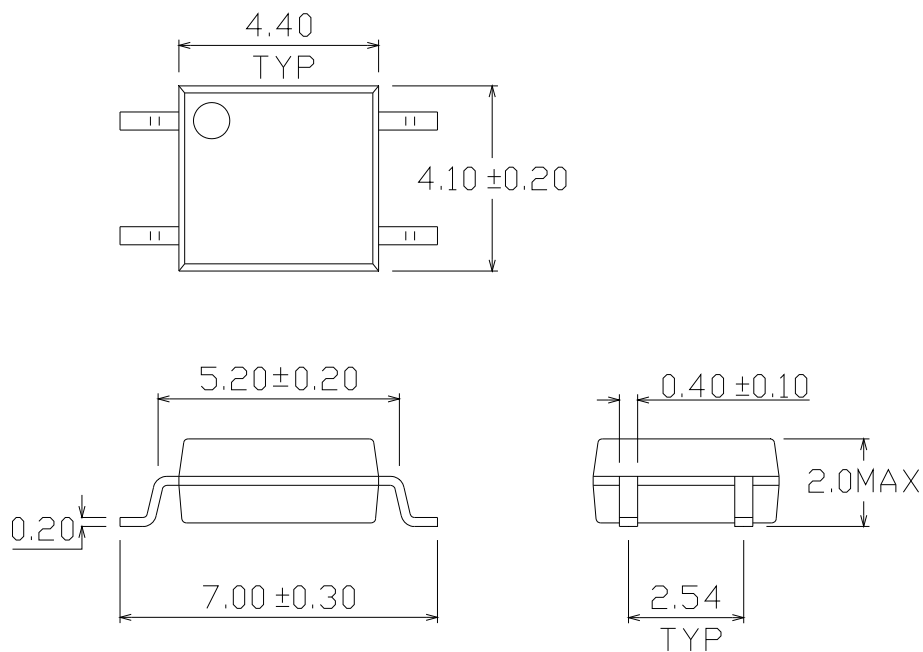
CHARACTERISTIC CURVES



Reflow soldering curve



SOP-4



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW TLP127GB-S	SOP-4	3000	Tape and reel