Description

The 4N25, 4N26, 4N27, 4N28, 4N35, 4N36, 4N37, 4N38 series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic DIP6 package with different lead forming options.

Features

- High isolation 5000 VRMS
- DC input with transistor output
- Operating temperature range - 55 °C to 110 °C
- RoHS & REACH Compliance
- MSL class 1
- UL-approved: UL1577, File No.E492440

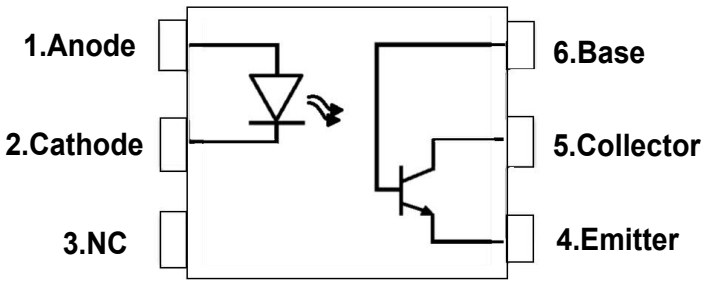
Truth Table (Positive Logic)

Input	Enable	Output
H	H	L
L	H	H
H	L	H
L	L	H
H	NC	L
L	NC	H

Applications

- Sequence controller
- Telephone/FAX
- System appliances, measuring instrument
- Programmable logic controller

Schematics



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT	NOTE
INPUT				
Forward Current	I_F	50	mA	
Peak Forward Current(t=10μs)	I_{FM}	1	A	1
Reverse Voltage	V_R	6	V	
Power Dissipation(TA=25°C)	P_D	70	mW	
OUTPUT				
Collector - Emitter Voltage	V_{CEO}	80	V	
Collector-Base Breakdown Voltage	V_{CBO}	80	V	
Emitter - Collector Voltage	V_{ECO}	7	V	
Emitter-Base Breakdown Voltage	V_{EBO}	7	V	
Collector Current	I_C	80	mA	
Power Dissipation(TA=25°C)	P_C	150	mW	
COMMON				
Total Power Dissipation	Ptot	200	mW	
Isolation Voltage	Viso	5000	Vrms	2
Operating Temperature	Topr	-55~+110	°C	
Storage Temperature	Tstg	-55~+110	°C	
Soldering Temperature	Tsol	260	°C	

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

Note 2. For 10 seconds

ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	TEST CONDITION	NOTE
INPUT							
Forward Voltage	V_F	-	1.24	1.4	V	IF=10mA	
Reverse Current	I_R	-	-	10	μA	VR=6V	
Input Capacitance	Cin	-	30	-	pF	V=0, f=1kHz	
OUTPUT							
Collector Dark Current	I_{CEO}	-	-	20	nA	VCE=10V, IF=0	
Collector-Emitter Breakdown Voltage	BV_{CEO}	80	-	-	V	IC=1mA, IF=0	
Emitter-Collector Breakdown Voltage	BV_{ECO}	7	-	-	V	IE=1mA, IF=0	
Collector-Base Breakdown	BV_{CBO}	80	-	-	V	IC= 0.1mA, IF=0	
Emitter-Base Breakdown	BV_{EBO}	7	-	-	V	IE= 0.1mA，IF=0	

TRANSFER CHARACTERISTICS

Current Transfer Ratio	CTR	4N35, 4N36, 4N37	100	-	-	%	IF=10mA, VCE=10V	
		4N25,4N26, 4N38	20	-	-			
		4N27, 4N28	10	-	-			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	4N25,4N26, 4N27,4N28	-	-	0.5	V	IF=10mA, VCE=10V	
		4N35,4N36,4N37	-	-	0.3		IF= 10mA, IC= 0.5mA	
		4N38	-	-	1.0		IF= 20mA, IC= 4mA	
		4N25,4N26, 4N27,4N28	-	-	0.5		IF= 50mA, IC= 2mA	
Isolation Resistance	R_{IO}		10^12	10^14	-	Ω	V_{IO}=500Vdc.	
Floating Capacitance	C_{IO}		-	0.2	1	pF	V=0, f=1MHz	
Cut-off Frequency	fc		-	6	-	kHz	VCE=5V, IC=2mA RL=100Ω,-3dB	
Turn On Time	t_{on}	4N25,4N26,4N27, 4N28	-	3	15	-	IF= 10mA, VCC= 10V, RL= 100Ω	
		4N35,4N36,4N37, 4N38	-	10	12	-	Ic= 2mA, VCC= 10V, RL= 100Ω	
Turn Off Time	t_{off}	4N25,4N26,4N27, 4N28	-	3	16	-	IF= 10mA, VCC= 10V, RL= 100Ω	
		4N35,4N36,4N37, 4N38	-	9	12	-	Ic= 10mA, VCC= 10V, RL= 100Ω	

CHARACTERISTIC CURVES

Fig.1 Forward Current vs. Ambient Temperature

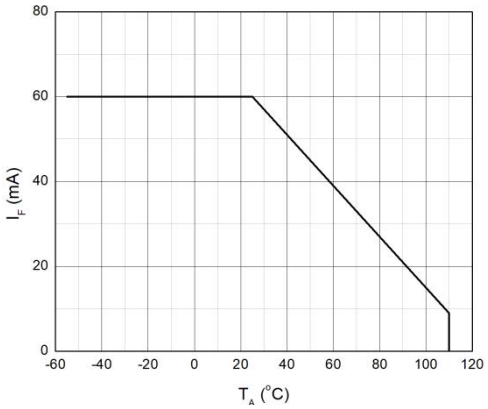


Fig.2 Collector Power Dissipation vs. Ambient Temperature

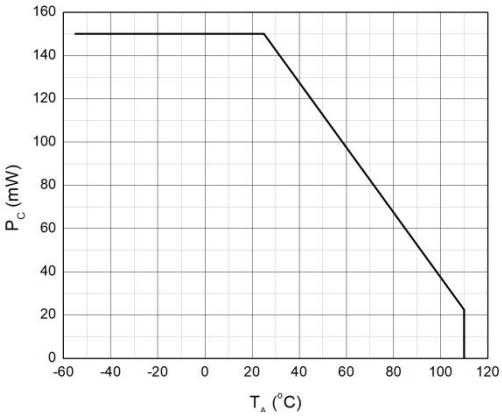


Fig.3 Forward Current vs. Forward Voltage

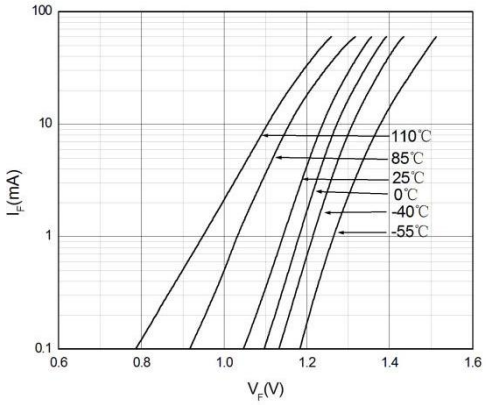


Fig.4 Collector Dark Current vs. Ambient Temperature

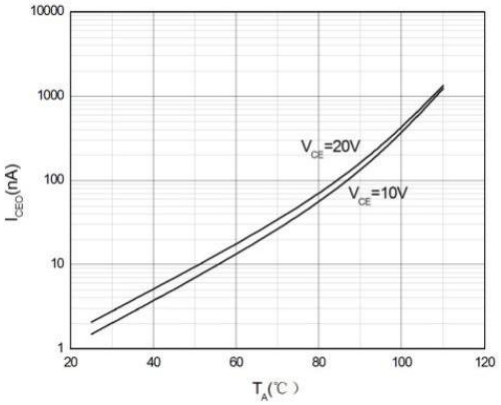


Fig.5 Collector Current vs. Collector-emitter Voltage

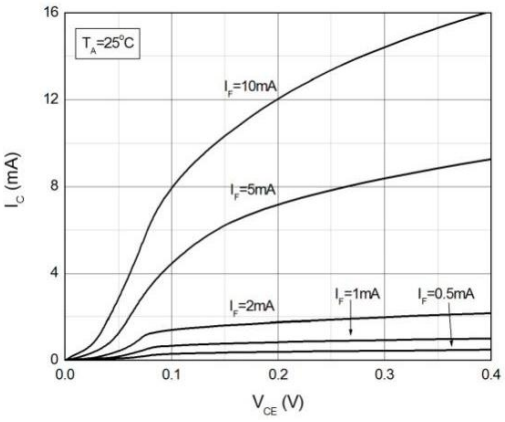
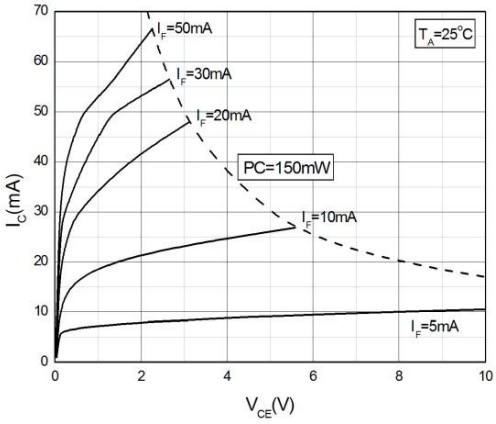


Fig.6 Collector Current vs. Collector-emitter Voltage



CHARACTERISTIC CURVES

Fig.7 Normalized Current Transfer Ratio vs. Forward Current

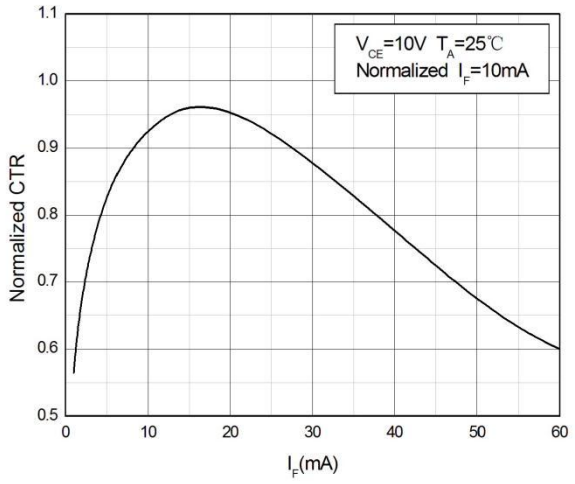


Fig.8 Normalized Current Transfer Ratio vs. Ambient Temperature

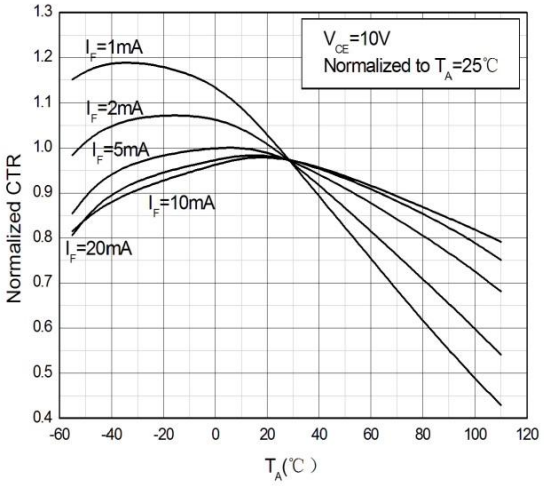


Fig.9 Current Transfer Ratlo(Unsaturated) vs Base-Emitter Resistance

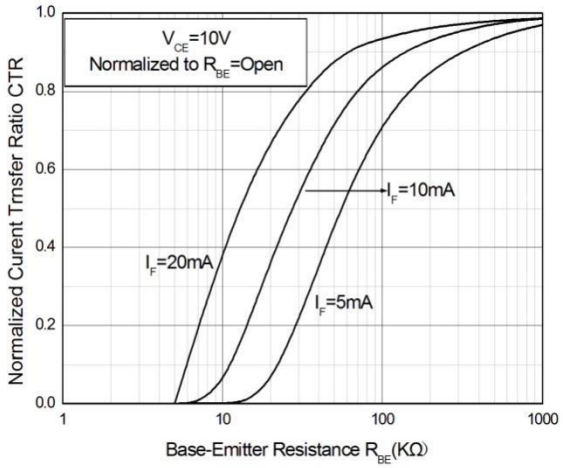
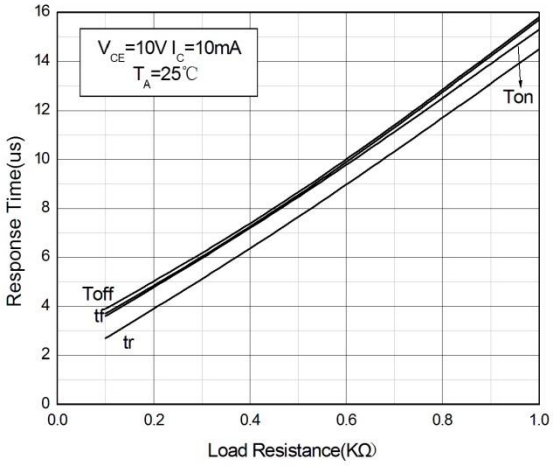
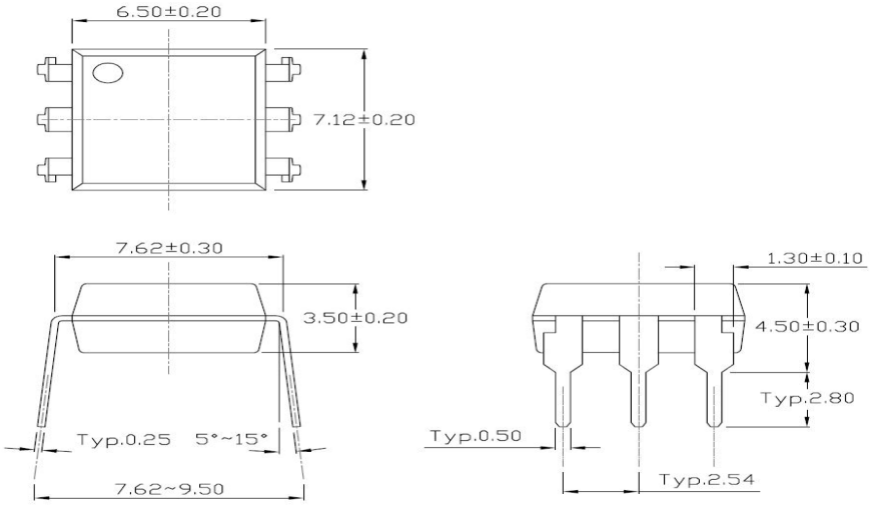


Fig.10 Switching Time vs. Load Resistance



PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

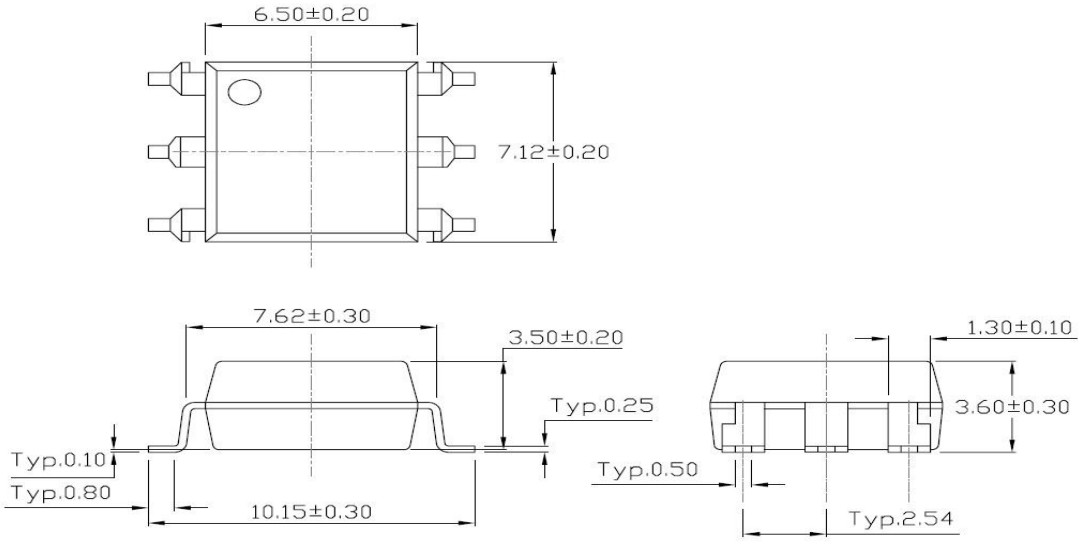
Standard DIP – Through Hole (DIP Type)



Gullwing (400mil) Lead Forming – Through Hole (M Type)

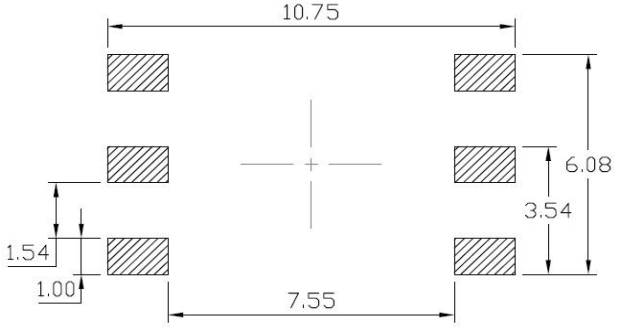
PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Surface Mount (Low Profile) Lead Forming (SL Type)

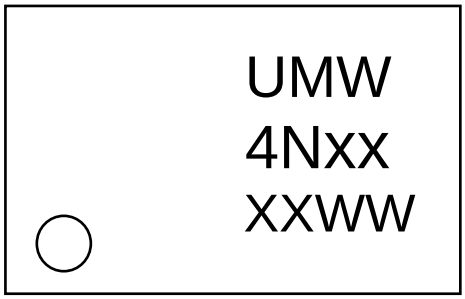


Recommended Solder Mask (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming & Surface Mount (Low Profile) Lead Forming



Marking



- “ XX” denotes YEAR;
- “ WW” denotes WEEK

ORDERING INFORMATION

Order code	Package	Baseqty	Deliverymode
UMW 4N25SM	SOP-6	1000	Tape and reel
UMW 4N26SM	SOP-6	1000	Tape and reel
UMW 4N27SM	SOP-6	1000	Tape and reel
UMW 4N28SM	SOP-6	1000	Tape and reel
UMW 4N35SM	SOP-6	1000	Tape and reel
UMW 4N36SM	SOP-6	1000	Tape and reel
UMW 4N37SM	SOP-6	1000	Tape and reel
UMW 4N38SM	SOP-6	1000	Tape and reel
UMW 4N25	DIP-6	1600	Tube and box
UMW 4N26	DIP-6	1600	Tube and box
UMW 4N27	DIP-6	1600	Tube and box
UMW 4N28	DIP-6	1600	Tube and box
UMW 4N35	DIP-6	1600	Tube and box
UMW 4N36	DIP-6	1600	Tube and box
UMW 4N37	DIP-6	1600	Tube and box
UMW 4N38	DIP-6	1600	Tube and box