

1.Description

The UMW 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.

3.Applications

- Sequence controller
- Telephone/FAX

4.Pinning information

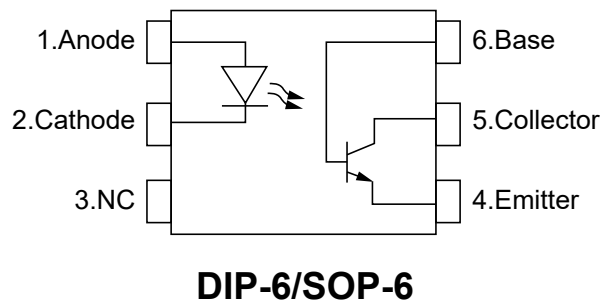
Truth Table (Positive Logic)

Input	Input	Input
H	H	L
L	H	H
H	L	H
L	L	H
H	NC	L
L	NC	H

2.Features

- High isolation 5000 V_{RMS}
- DC input with transistor output
- Operating temperature range -55°C to 110°C
- RoHS & REACH Compliance
- MSL class 1
- UL-approved: UL1577, File No.E547318

- System appliances, measuring instrument
- Programmable logic controller





5. Absolute Maximum Ratings

Parameter	Symbol	Value	Unit	Note
INPUT				
Forward Current	I_F	60	mA	
Peak Forward Current($t=10\mu s$)	I_{FM}	1	A	1
Reverse Voltage	V_R	6	V	
Power Dissipation($T_A=25^\circ C$)	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($T_A=25^\circ C$)	P_C	150	mW	
COMMON				
Total Power Dissipation	P_{TOT}	220	mW	
Isolation Voltage	V_{ISO}	5000	Vrms	2
Operating Temperature	T_{OPR}	-55 to 110	$^\circ C$	
Storage Temperature	T_{STG}	-55 to 110	$^\circ C$	
Soldering Temperature	T_{SOL}	260	$^\circ C$	

Notes:

1. AC For 1 Minute, R.H. = 40 ~ 60%
2. For $10\mu s$



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}	$V=0, f=1\text{kHz}$		30		pF
OUTPUT						
Collector Dark Current	I_{CEO}	$V_{CE}=10\text{V}, I_F=0$			20	nA
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=1\text{mA}, I_F=0$	80			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	$I_E=1\text{mA}, I_F=0$	7			V
Collector-Base Breakdown	BV_{CBO}	$I_C=0.1\text{mA}, I_F=0$	80			V
Emitter-Base Breakdown	BV_{EBO}	$I_E=0.1\text{mA}, I_F=0$	7			V

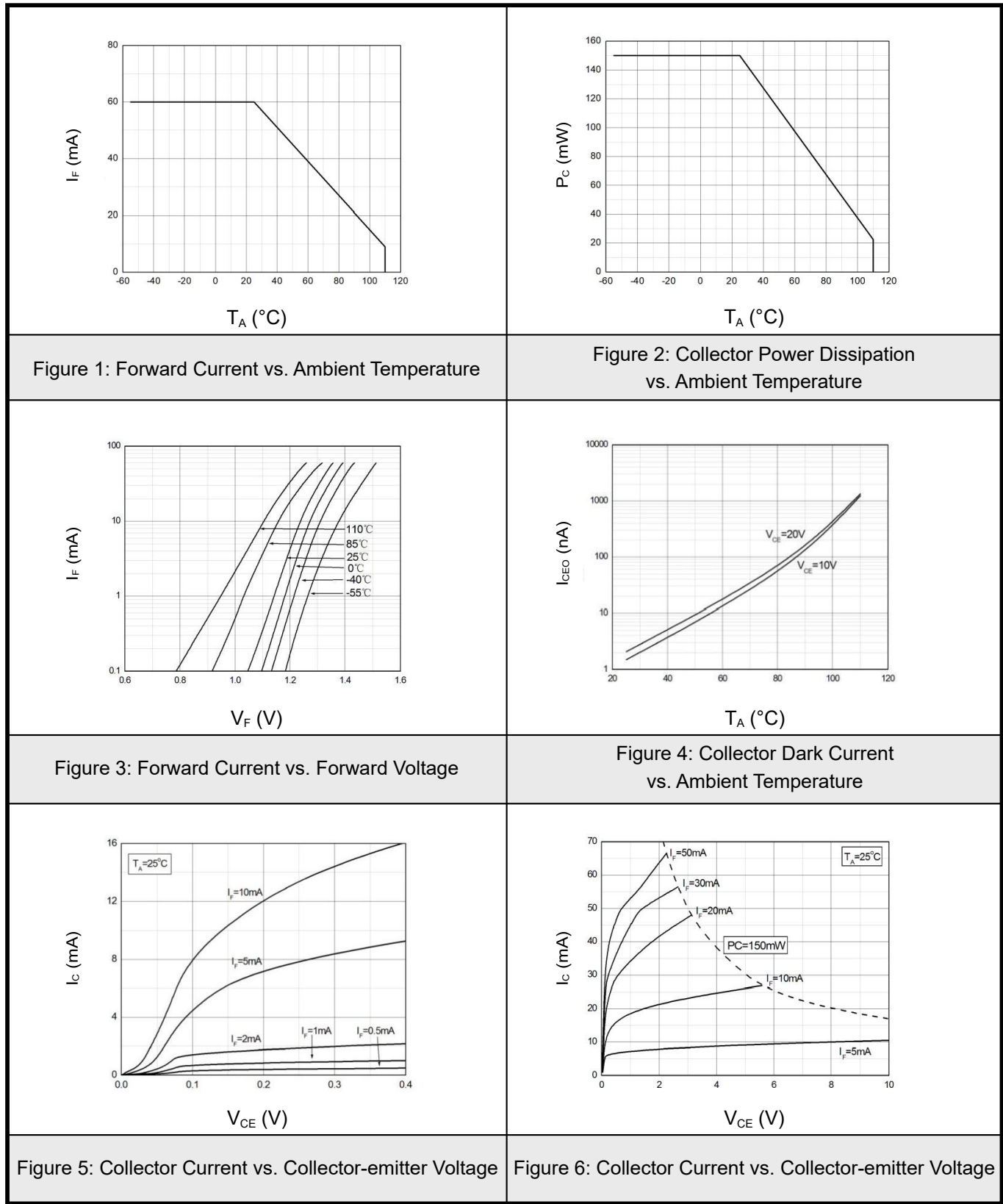


7. Transfer Characteristics

Parameter		Symbol	Conditions	Min	Typ	Max	Units
Current Transfer Ratio	4N35, 4N36, 4N37	C_{TR}	$I_F=10mA, V_{CE}=10V$	100			%
	4N25, 4N26, 4N38			20			
	4N27, 4N28			10			
Collector-Emitter Saturation Voltage	4N25, 4N26	$V_{CE(SAT)}$	$I_F=10mA, V_{CE}=10V$			0.5	V
	4N27, 4N28						
	4N35, 4N36, 4N37		$I_F=10mA, I_C=0.5mA$			0.3	
	4N38		$I_F=20mA, I_C=4mA$			1	
	4N25, 4N26		$I_F=50mA, I_C=2mA$			0.5	
	4N27, 4N28						
Isolation Resistance		R_{IO}	$V_{IO}=500V_{DC}$	10^{11} 2	10^{14}		Ω
Floating Capacitance		C_{IO}	$V=0, f=1MHz$		0.2	1	pF
Cut-off Frequency		f_c	$V_{CE}=5V, I_C=2mA$ $R_L=100\Omega, -3dB$		6		kHz
Turn On Time	4N25, 4N26, 4N27	T_{ON}	$I_F=10mA, V_{CC}=10V$		3	15	μs
	4N28		$R_L=100\Omega$				
	4N35, 4N36, 4N37		$I_C=2mA, V_{CC}=10V$		10	12	μs
	4N38		$R_L=100\Omega$				
Turn Off Time	4N25, 4N26, 4N27	T_{OFF}	$I_F=10mA, V_{CC}=10V$		3	16	μs
	4N28		$R_L=100\Omega$				
	4N35, 4N36, 4N37		$I_C=10mA, V_{CC}=10V$		9	12	μs
	4N38		$R_L=100\Omega$				

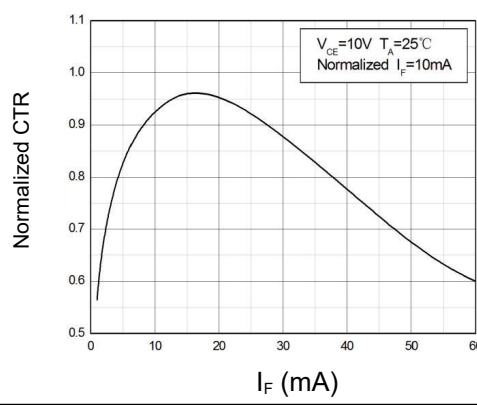
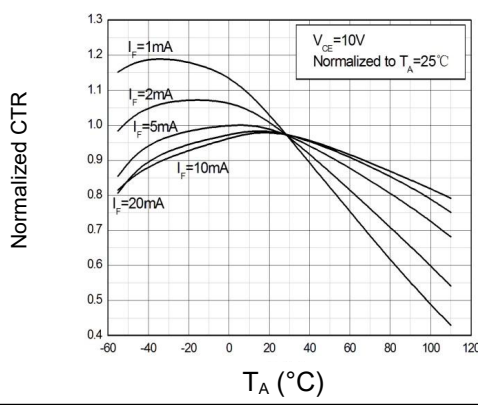
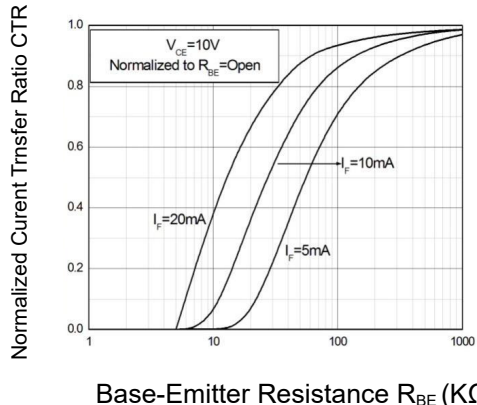
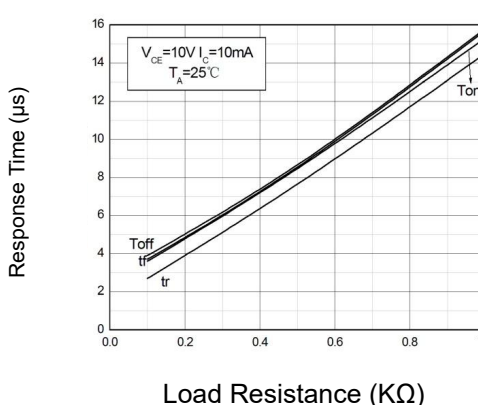


8.1 Typical characteristic



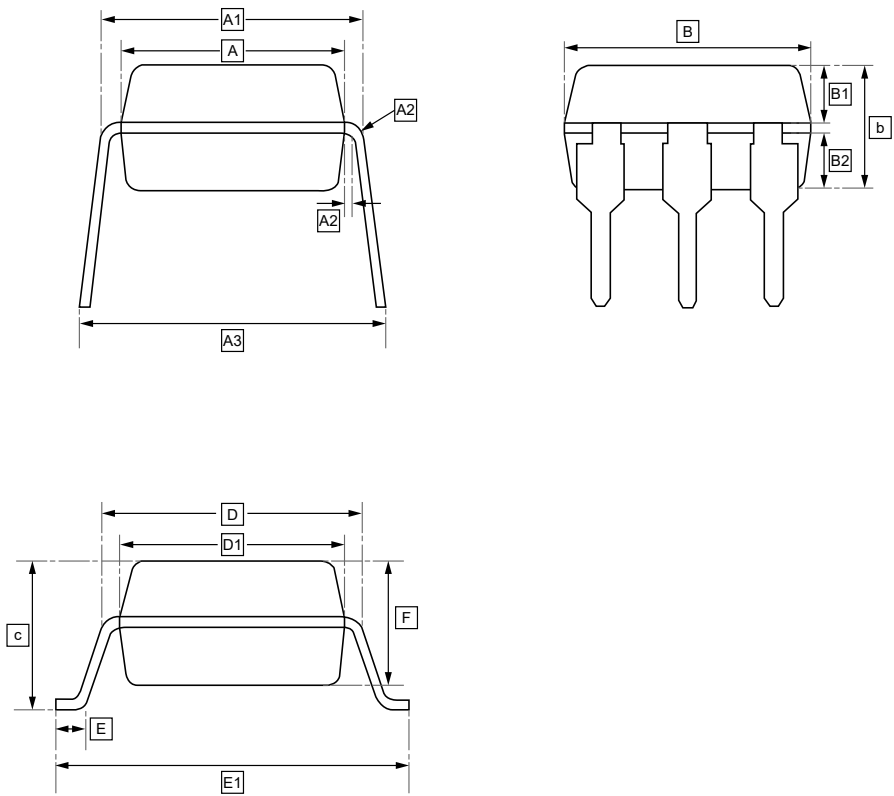


8.2Typical characteristic

	
Figure 7: Normalized Current Transfer Ratio vs. Forward Current	Figure 8: Normalized Current Transfer Ratio vs. Ambient Temperature
	
Figure 9: Current Transfer Ratio(Unsaturated) vs Base-Emitter Resistance	Figure 10: Switching Time vs. Load Resistance



9.DIP-6/SOP-6 Package Outline Dimensions



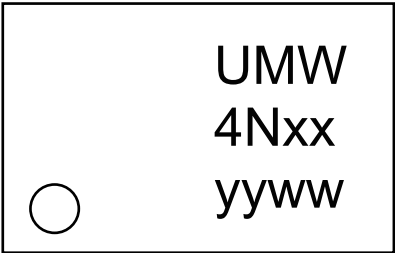
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	B	B1	B2	b	c	D	D1	E
Min	6.45	7.45	0.2	8.7	7.07	1.625	1.595	3.45	4.2	7.45	6.45	0.76
Max	6.55	7.75	(typ.)	9.1	7.14	(typ.)	1.655	3.55	4.4	7.75	6.55	(typ.)

Symbol	E1	F
Min	10.0	3.45
Max	10.4	3.55



10.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
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	Tube and box
UMW 4N38SM	SOP-6	1000	Tube and box
UMW 4N25	DIP-6	3250	Tube and box
UMW 4N26	DIP-6	3250	Tube and box
UMW 4N27	DIP-6	3250	Tube and box
UMW 4N28	DIP-6	3250	Tube and box
UMW 4N35	DIP-6	3250	Tube and box
UMW 4N36	DIP-6	3250	Tube and box
UMW 4N37	DIP-6	3250	Tube and box
UMW 4N38	DIP-6	3250	Tube and box



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