ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Photo pin diode, reverse voltage range		V_r	- 0.3		12	V
Photo pin diode, reverse photo current					10	mA
Average IRED current		$I_{IRED(DC)}$			100	mA
Repetitive pulsed IRED current	< 90 µs, t_{on} < 20 %	$I_{IRED(RP)}$			550	mA
IRED, reverse voltage range		V_{rIRED}	- 0.3		5	V
Power dissipation	See figure 3	P_{tot}			200	mW
Juntion temperature		T_J			125	°C
Ambient temperature range (operating)		T_{amb}	- 25		+ 85	°C
Storage temperature range		T_{stg}	- 40		+ 85	°C
Soldering temperature	See the chapter “Soldering conditions” for lead-bearing and Pb-free processing				260	°C
Virtual source size	Method: (1 - 1/e) encircled energy	d		2		mm

Note

Compatible to class 1 opration of IEC 60825 or EN60825 with worst case IrDA SIR pulse pattern, 115.2 kbit/s

ELECTRICAL CHARACTERISTICS

PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
TRANSCEIVER						
Supported data rates	Base band		9.6		4000	kbit/s

Note

Tested for the following parameters (T = 25 °C, unless otherwise stated)

OPTOELECTRONIC CHARACTERISTICS

PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
RECEIVER						
Spectral sensitivity	$\|\alpha\| \leq \pm 15°$, V_r = 2 V, λ = 875 nm	$S\lambda$	1	1.2	1.8	nA/(mW/m²)
Bias voltage range, detector		V_{Rev}			12	V
Reverse leakage current				0.2		nA
Spectral bandwith		λ	800		950	nm
Max. operating irradiance	$\|\alpha\| \leq \pm 90$ °C, V_{CC} = 2 V	$E_{e, max.}$	8000	15 000		W/m²
Rise time at load: R = 50 Ω	V_r = 2 V, λ = 875 nm	t_r		40		ns
Fall time at load: R = 50 Ω	V_r = 2 V, λ = 875 nm	t_f		40		ns
TRANSMITTER						
Forward current operating condition for low power IrDA operation	I_e = 4 mW/sr to 28 mW/sr in $\|\alpha\| \leq \pm 15°$	I_{F1}		30		mA
Output radiant intensity	$\|\alpha\| \leq \pm 15°$, I_{F1} = 35 mA, 25 % duty cycle	I_e	4	8	14	mW/sr
	$\|\alpha\| \leq \pm 15°$, I_{F1} = 350 mA, 25 % duty cycle	I_e	35			mW/sr
Forward voltage	I_f = 50 mA	V_f	1.2		1.45	V
Peak emission wavelength		λ_p	880		900	nm
Spectral emission bandwidth				45		nm
Optical rise/fall time	2 MHz square wave signal (duty cycle 1:1)			38		ns

Note

Tested for the following parameters (T = 25 °C, unless otherwise stated)

RECOMMENDED SOLDER PROFILES

Solder Profile for Sn/Pb Soldering

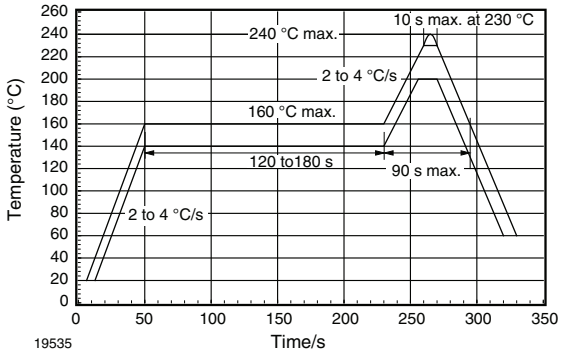


Fig. 1 - Recommended Solder Profile for Sn/Pb Soldering

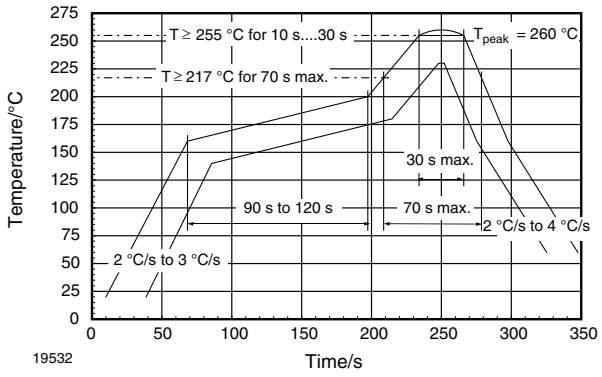


Fig. 2 - Solder Profile, RSS Recommendation

Lead (Pb)-free, Recommended Solder Profile

The TFDU2201 is a lead (Pb)-free transceiver and qualified for lead (Pb)-free processing. For lead (Pb)-free solder paste like $Sn_{(3.0\ -\ 4.0)}Ag_{(0.5\ -\ 0.9)}Cu$, there are two standard reflow profiles: Ramp-Soak-Spike (RSS) and Ramp-To-Spike (RTS). The Ramp-Soak-Spike profile was developed primarily for reflow ovens heated by infrared radiation. With widespread use of forced convection reflow ovens the Ramp-To-Spike profile is used increasingly. Shown in figure 2 and 3 are Vishay's recommended profiles for use with the TFDU2201 transceivers. For more details please refer to the application note "SMD Assembly Instructions".
A ramp-up rate less than 0.9 °C/s is not recommended. Ramp-up rates faster than 1.3 °C/s could damage an optical part because the thermal conductivity is less than compared to a standard IC.

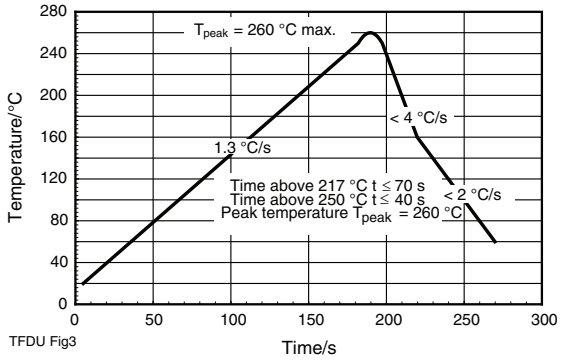


Fig. 3 - RTS Recommendation

Wave Soldering

For TFDUxxxx and TFBSxxxx transceiver devices wave soldering is not recommended.

Manual Soldering

Manual soldering is the standard method for lab use. However, for a production process it cannot be recommended because the risk of damage is highly dependent on the experience of the operator. Nevertheless, we added a chapter to the above mentioned application note, describing manual soldering and desoldering.

Storage

The storage and drying processes for all Vishay transceivers (TFDUxxxx and TFBSxxx) are equivalent to MSL4.
The data for the drying procedure is given on labels on the packing and also in the application note "Taping, Labeling, Storage and Packing".

CURRENT DERATING DIAGRAM

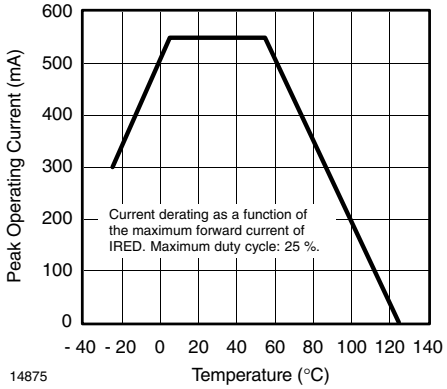
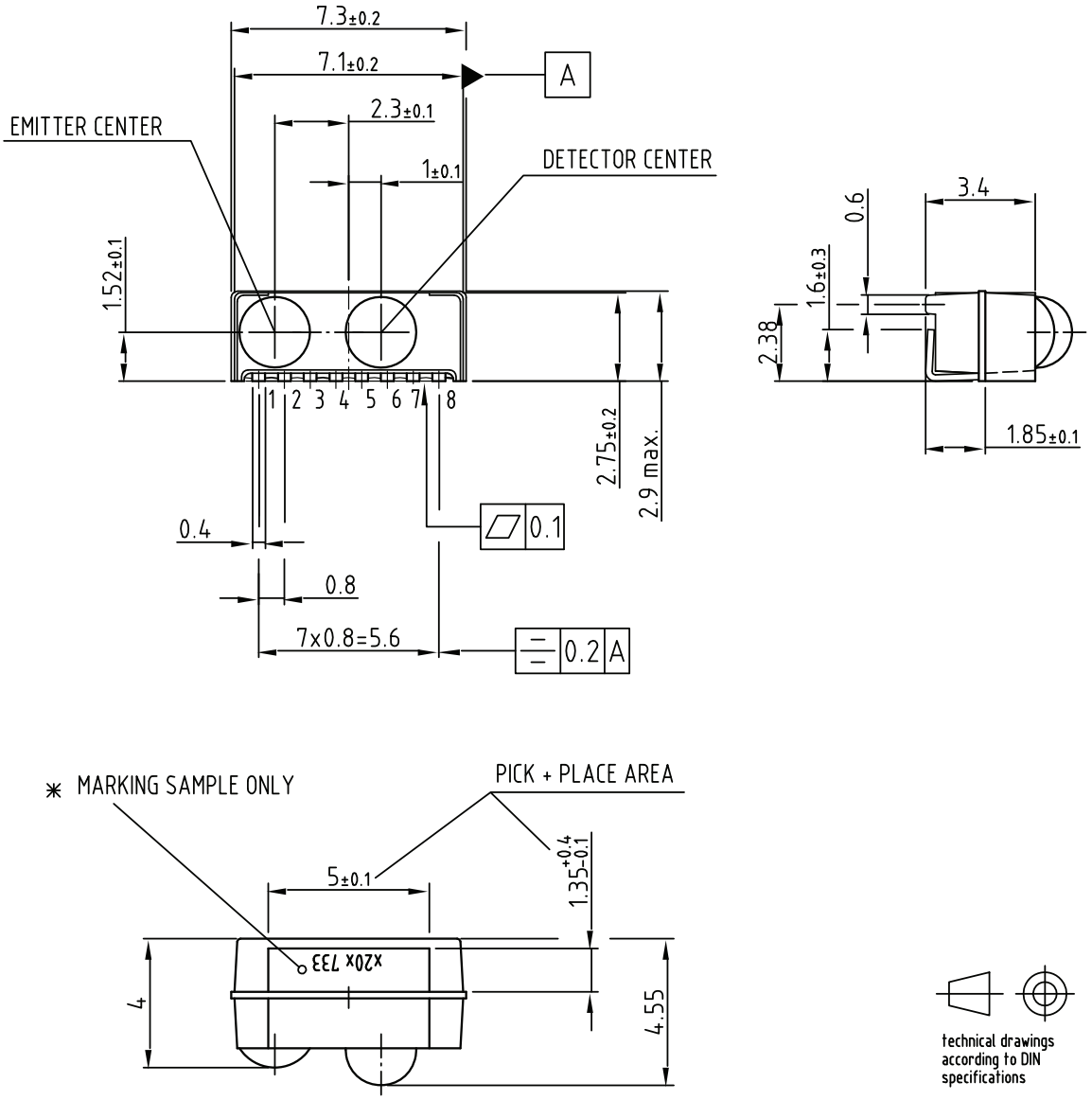


Fig. 4 - Current Derating Diagram

PACKAGE DIMENSIONS in millimeters

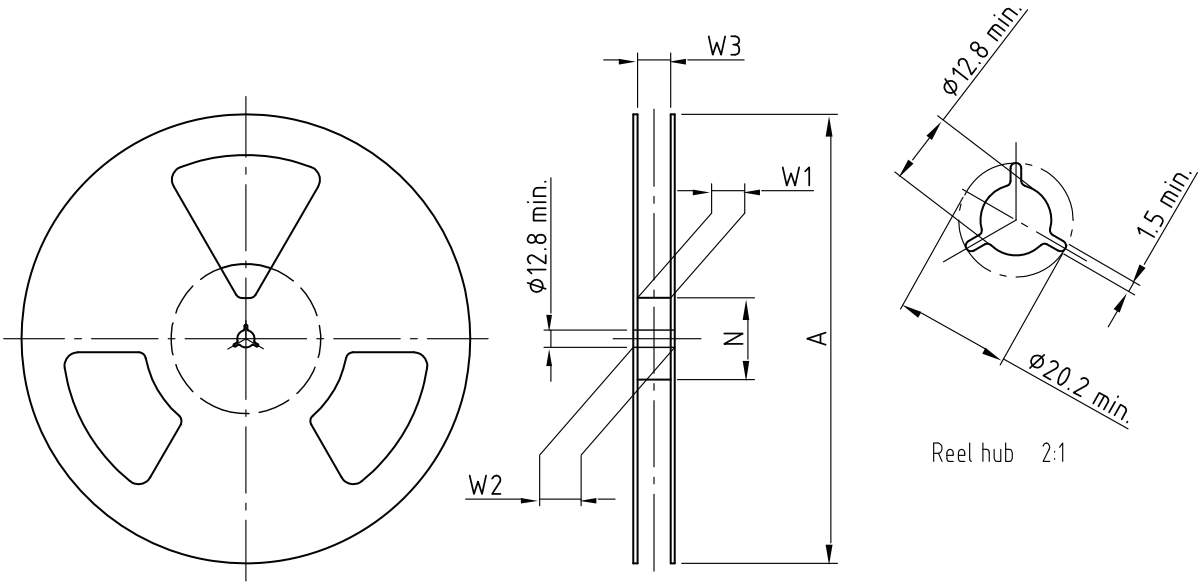


✳ MARKING ORIENTATION
180 DEGREES ALLOWED

Drawing-No.: 6.550-5185.01-4
Issue: 5; 02.09.05
19821

Fig. 5 - Package Drawing, TFDU2201

REEL DIMENSIONS in millimeters



Drawing-No.: 9.800-5090.01-4
Issue: 1; 29.11.05
14017

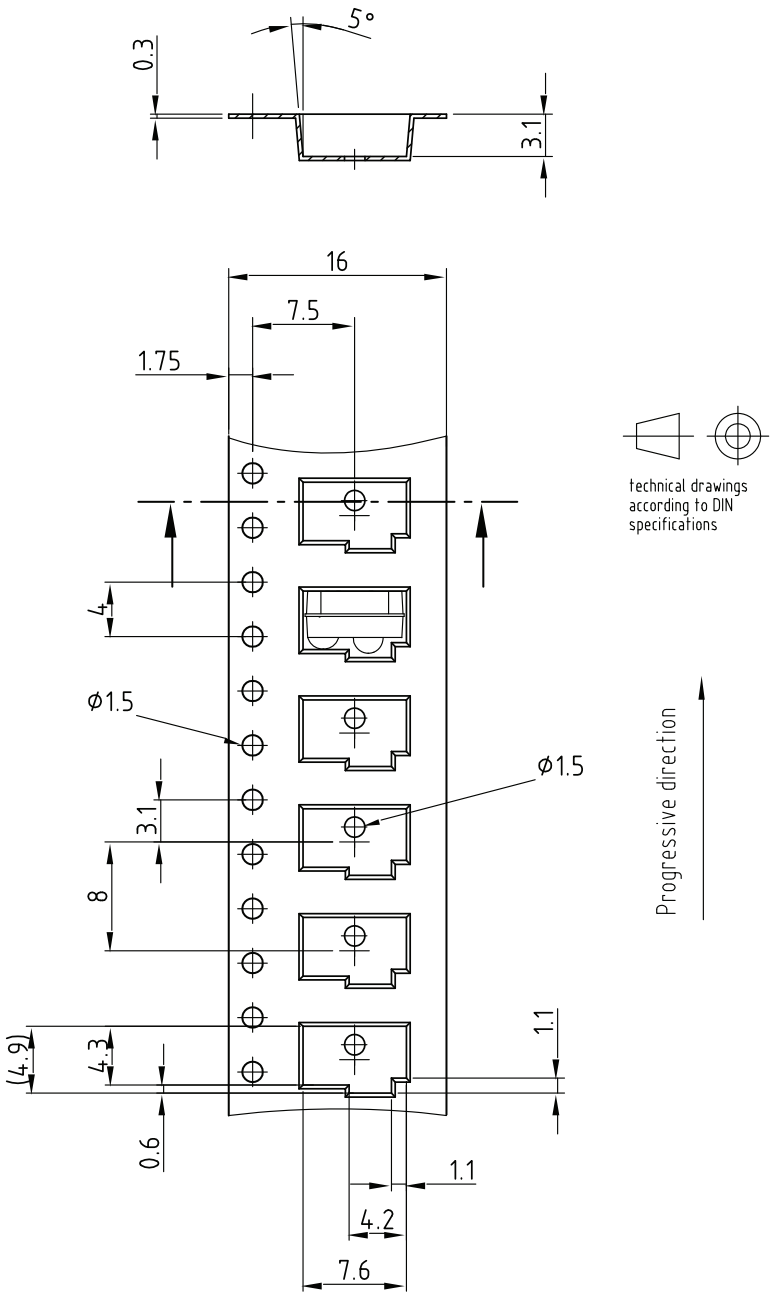
Form of the leave open
of the wheel is supplier specific.

Dimension acc. to IEC EN 60 286-3

technical drawings
according to DIN
specifications

	TAPE WIDTH (mm)	A MAX. (mm)	N (mm)	W_1 MIN. (mm)	W_2 MAX. (mm)	W_3 MIN. (mm)	W_3 MAX. (mm)
TFDU2201-TR1	16	180	60	16.4	22.4	15.9	19.4
TFDU2201-TR3	16	330	50	16.4	22.4	15.9	19.4

TAPE DIMENSIONS in millimeters



Drawing-No.: 9.700-5227.01-4
Issue: 3; 03.09.99
19820

Fig. 6 - Tape Drawing, TFDU2201 for Side View Mounting

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