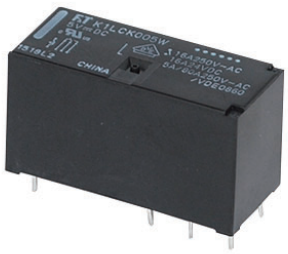
POWER RELAY
1 POLE - 16A INRUSH 80A LATCHING SERIES

FTR-K1L Series

RoHS Compliant

■ FEATURES



- Low profile
  - Height: 15.7mm
- Inrush peak current up to 80A (TV-5)
- High insulation between coil and contacts:
  - Insulation distance: 10mm
  - Dielectric strength: 5,000VAC
  - Surge strength: 10,000V
- Plastic materials
  - UL94 flammability class V-0
- Cadmium free relay
- RoHS compliant

■ APPLICATIONS

Heater control, home appliances etc.

■ PART NUMBERS

[Example] FTR-K1 L D C K 012 W

(a) (b) (c) (d) (e) (f) (g)

(a)	Relay type	FTR-K1 series	
(b)	Operatiing functioon	L	: Latching type
(c)	Coil type	Nil D	: 1 coil : 2 coils
(d)	Contact configuration	A C	: 1a (1 Form A) : 1c (1 Form C)
(e)	Coil poweer / Enclosure	K	: Standard / Flux free
(f)	Coil rated voltage	012	5....24VDC Pleease refer to coil rating table
(g)	Contact material	W T	: $AgSnO_2$ (in combination with 1c type only) : $AgSnO_2$ (in combination with 1a type only, TV-5 rated)

Actual marking does not carry the type name : “FTR”

E.g.: Ordering code: FTR-K1LDCK012W Actual marking: K1LDCK012W

■ SPECIFICATIONS

Item			Specifications		Remarks/Conditions
			FTR-K1L( )AK( )T	FTR-K1L( )CK( )W	
Contact Data	Configuration		1a (1 Form A)	1c (1 Form C)	
	Construction		Single		
	Material		$AgSnO_2$		
	Resistance		Max. 100mΩ		Initial at 1A, 6VDC
	Contact rating		16A, 250VAC		Resistive
	Max. carrying current		20A		
	Max. switching voltage		440VAC		
	Max. switching power		4,000VA		
	Limited making capacity		80A, 250VAC	80A, 250VAC (Make)	
	Min. switching load *1		100mA, 5VDC		
Coil	Rated power		1 coil: 400mW / 2 coils: 600mW		At 20°C
	Pick-up voltage		1 coil: 196mW / 2 coils: 294mW		At 20°C
	Operating temperature range		-40°C to +85°C		No frost
Time	Set		Max. 15ms (no diode, excluding bounce)		At nominal voltage
	Reset		Max. 15ms (no diode, excluding bounce)		At nominal voltage
	Min. coil excitation time		Min. 30ms		At nominal voltage
Life	Mechanical		Min. 3 x 10^6 operations		
	Electrical	AC Contact rating	Min. 100 x 10^3 operations	Min. 50 x 10^3 operations	Resistive
		5/80A, 250VAC (inrush)	Min. 25 x 10^3 operations	Min. 25 x 10^3 operations (N.O. contact)	
Insulation	Insulation resistance		Min. 1,000mΩ		Initial, at 500VDC
	Dielectric strength	Open contacts	1,000VAC (50/60Hz) 1 minute		
		Coil to contacts	5,000VAC (50/60Hz) 1 minute		
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave		
	Clearance / Creepage		10mm / 10mm		
	Insuration (DIN EN61810-1, VDE0435)		Voltage: 250V, pollution degree: 3, Material group: IIIa		
Others	Vibration resistance	Misoperation	10 to 55 to 10Hz, single amplitude 0.35mm		Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10 to 55 to 10Hz, single amplitude 0.75mm		Coil OFF, 3 axis, total 6 hours
	Shock resistance	Misoperation	200m/s^2 (11±1ms)		Coil ON/OFF, 3 axis, total 36 operations
		Endurance	1,000m/s^2 (6 ± 1ms)		Coil OFF, 3 axis, total 18 operations
	Dimensions / Weight		12.7 × 29.0 × 15.7mm / Approx.13.0g		

*1: Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental contions and expected reliability levels.

❗ Need to consider the heat from PCB when max. current is more than 10A.

■ COIL DATA

• 1 Coil

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance (Ω)±10%	Set Voltage*1 (VDC)	Reset Voltage*1 (VDC)	Max. Applied Voltage (VDC)	Rated Power (mW)
005	5	63	+3.5	-3.5	9	400
012	12	360	+8.4	-8.4	21.6	
024	24	1,440	+16.8	-16.8	43.2	

• 2 Coils

Coil Code	Rated Coil Voltege (VDC)	Coil Resistance (Ω)±10%	Set Voltage*1 (VDC)	Reset Voltage*1 (VDC)	Max. Appliled Voltage (VDC)	Reted Poweer (mW)
005	5	P 42	+3.5	-	9	600
		S 42	-	+3.5		
012	12	P 240	+8.4	-	21.6	
		S 240	-	+8.4		
024	24	P 960	+16.8	-	43.2	
		S 960	-	+16.8		

P: Set coil, S: Reset coil

Note: All values in the table are valid at 20°C and zero contact current, unless otherwise specified.

*: Specified operated values are valid for pulse wave voltage.

❗ Please use at rated coil voltage. Continuous energization on coil at the voltage exceeding max. applicable voltage is prohibited. Insulation deterioration may occur.

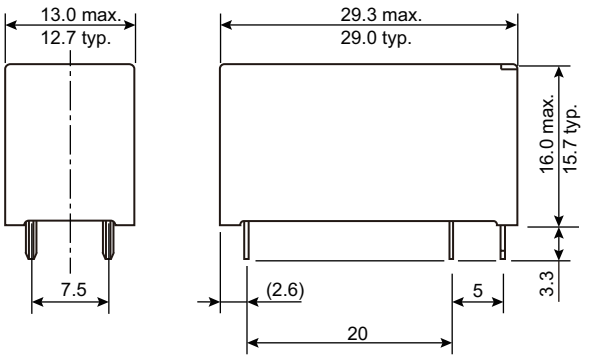
■ SAFETY STANDARDS

Type	Compliance	Contact Rating	
		1a	1c
cULus	Flammability: UL 94-V0 (plastics)		
	UL508 C22.2 NO.14 (File No. E63614)	16A, 24VDC (resistive) 16A, 277VAC (resistive) TV-5, 120VAC 25,000 cycles	16A, 24VDC (resistive) 16A, 277VAC (resistive) TV-5, 120VAC 25,000 cycles (make contact)
VDE	IEC/EN61810-1 EN60065 clause 14.6.1 EN60335-1 clause 15.3, 16.3, 29.1, 29.2, 29.3 EN60730 clause 12.2, 13.2, 20.1, 20.2, 20.3	16A, 250VAC (cosφ=1), 85°C 16A, 24VDC (0ms), 85°C	16A, 250VAC (cosφ=1), 85°C 16A, 24VDC (0ms), 85°C

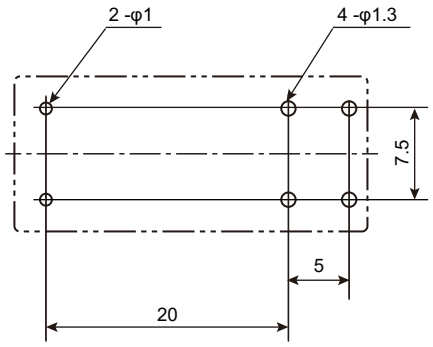
■ DIMENSIONS

FTR-K1LAK( )T

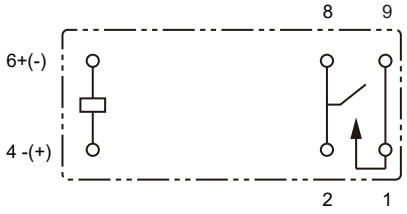
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)

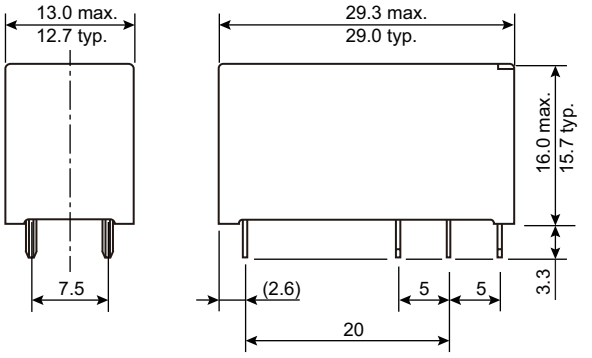


● Schematics (BOTTOM VIEW)

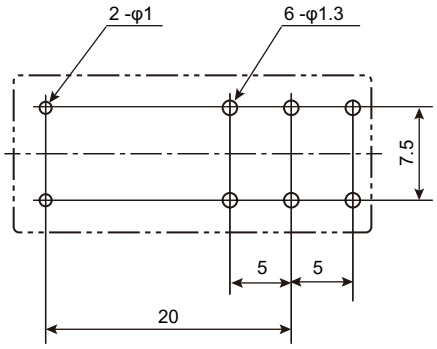


FTR-K1LCK( )W

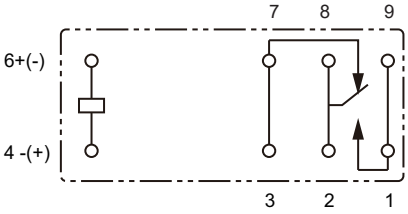
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)



● Schematics (BOTTOM VIEW)



・Dimensions do not include tolerances.
・Dimensions of the terminals do not include thickness of pre-soldering.
・Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

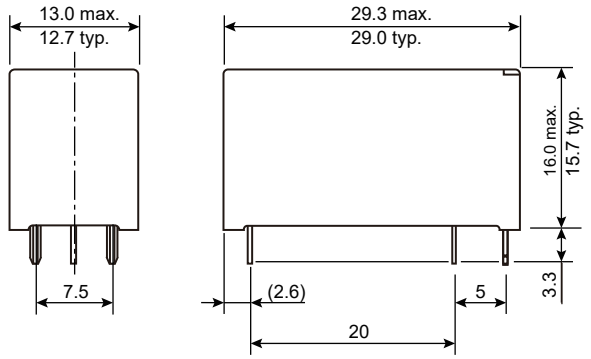
Unit: mm

■ DIMENSIONS

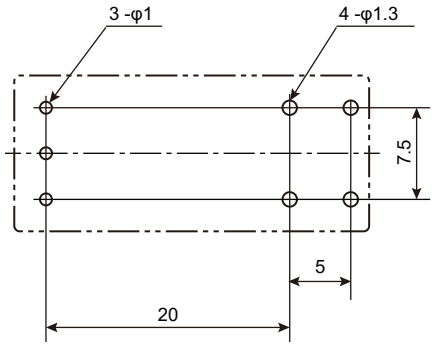
■ DIMENSIONS

FTR-K1LDAK( )T

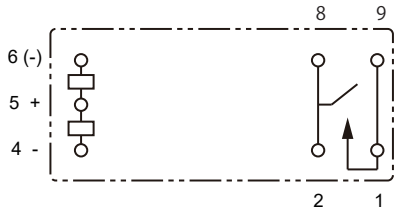
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)

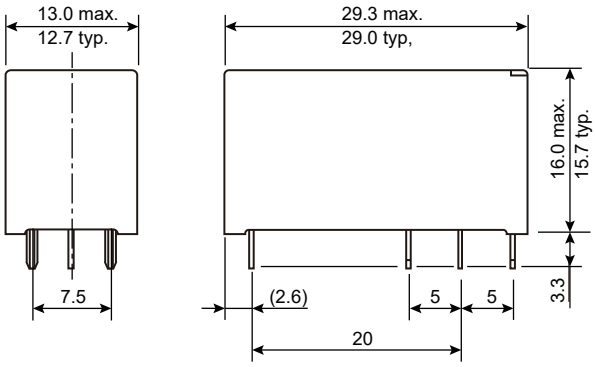


● Schematics (BOTTOM VIEW)

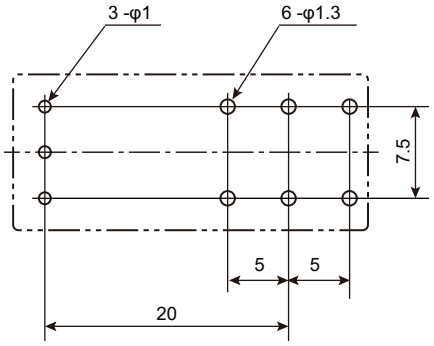


FTR-K1LDCK( )W

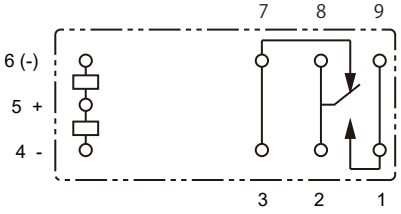
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)



● Schematics (BOTTOM VIEW)



・Dimensions do not include tolerances.
・Dimensions of the terminals do not include thickness of pre-soldering.
・Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

Unit: mm

■ SAFETY STANDARDS

Version	1 coil		2 coils		
Terminal No.	4	6	4	5	6
Set	-	+	-	+	
Reset	+	-		+	-

■ PART NUMBER LIST

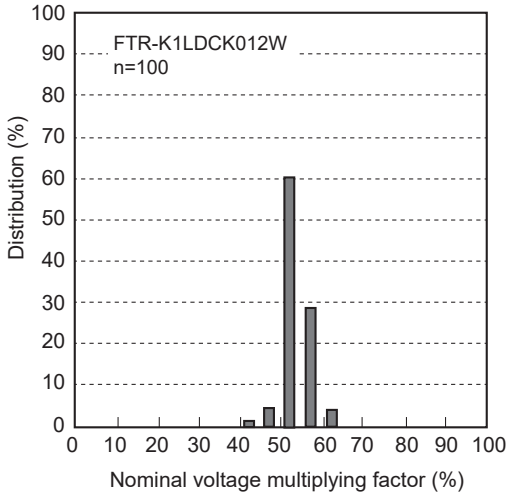
Part Number	Operating Function	Coil Type	Contact Configuration	Coil Power	Contact Material
FTR-K1LAK( )T	Latching type	1 coil	1a (1 Form A)	Standard (400mW)	$AgSnO_2$
FTR-K1LCK( )W			1c (1 Form C)		
FTR-K1LDAK( )T		2 coils	1a (1 Form A)	Standard (600mW)	
FTR-K1LDCK( )W			1c (1 form C)		

■ CHARACTERISTIC DATA

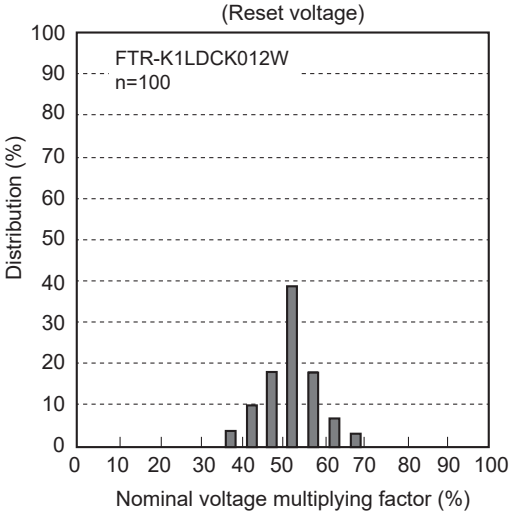
(Characteristic data is not guaranteed value but measured values of samples from production line.)

Distribution of set/reset voltage

(Set voltage)

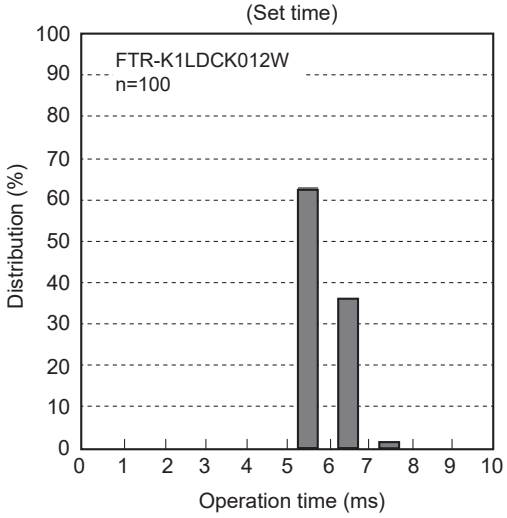


(Reset voltage)

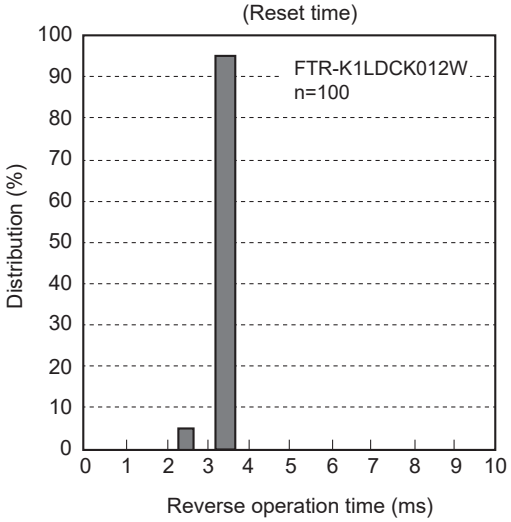


Distribution of set/reset time

(Set time)

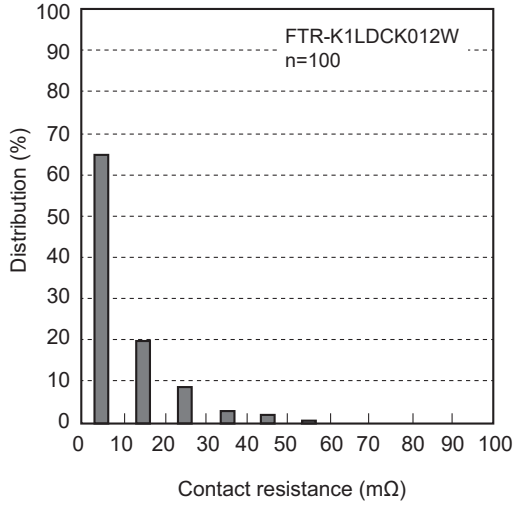


(Reset time)

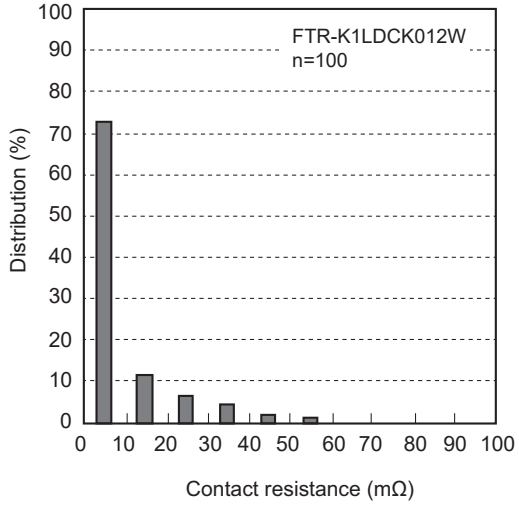


Distribution of contact resistance

(Make contact)



(Break contact)



CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.
- Please connect relay coils according to specified polarity.

Notes for latching relays

- Latching relays are shipped in the state set, but state may change due to shock during transportation or mounting. Before uing the relays, it is advisable to bring the relays in necessary state (set or reset) and program a circuit sequence. Otherwise, it will or will not operate simultaneously with power activation.
- Please connect relay coils according to specified polarity.
- Do not apply voltage to both set coil and reset coil at a time.

GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

2. Recommended lead free solder condition

- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

Flow Solder Condition:

Pre-Heating:	Maximum 120˚C within 90 sec.
Soldering:	Dip within 5 sec. at 255°C±5°C solder bath

Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

Soldering Iron:	30-60W
Temperature:	Maximum 350-360˚C
Duration:	Maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

Contact

Japan
FCL COMPONENTS LIMITED
Shinagawa Seaside Park Tower
12-4, Higashi-shinagawa 4-chome,
Tokyo 140 0002, Japan
Tel: +81-3-3450-1682
Email: fcl-contact@cs.fcl-components.com

North and South America
FCL COMPONENTS AMERICA, INC.
2055 Gateway Place Suite 480,
San Jose, CA 95110 USA
Tel: +1-408-745-4900
Email: contact@fcl-components.us

Europe
FCL COMPONENTS EUROPE B.V.
Diamantlaan 25
2132 WV Hoofddorp, Netherlands
Tel: +31-23-556-0910
Email: info@fcl-components.eu

Asia Pacific
FCL COMPONENTS ASIA PTE LTD.
51 Changi Business Park Central 2, #06-07
The Signature Singapore 486066
Singapore 117612
Tel: +65-6375-8560
Email: fcal@fcl-components.com

China
FCL COMPONENTS (SHANGHAI) CO.,LTD.
Unit 1105, Central Park - Jing An,
No.329 Heng Feng Road, Shanghai
200070, China
Tel: +86-21-3253 0998
Email: fcsh@fcl-components.com

Hong Kong
FCL COMPONENTS HONG KONG CO., LIMITED
Unit 2313, Seapower Tower, Concordia
Plaza, No.1 Science Museum Road,
TST, Kowloon, Hong Kong
Tel: +852-2881-8495
Email: fcal@fcl-components.com

Web: www.fcl-components.com/en/

FCL Components Products are intended for general use, including without limitation, in personal, household and office environments, in buildings and for ordinary use in the industry. FCL Components Products are not intended to be used in applications where extremely high safety is required (”High Safety Required Applications”), such as, but not limited to, applications in nuclear facilities, in aircraft automatic flight control, in air traffic control, in mass transit system control, in missile launch system, in weapon systems, in medical equipment for life support or any application involving a direct serious risk of physical injury or death.
Please do not use FCL Components Products without securing the sufficient safety and reliability required for the High Safety Required Applications.
In addition, FCL Components shall not be liable against the customer and/or any third party for any claims or damages arising in connection with the use of FCL Components Products in the High Safety Required Applications.
FCL Components warrants that its Products, if properly used and services, will conform to their specification and will be free from defects in material and workmanship for twelve months from delivery.
The implied warranties of merchantability and fitness for a particular purpose and all other warranties, representations and conditions, express or implied by statute, trade usage or otherwise, expect as set forth in this warranty, are excluded and shall not apply to the Products delivered.

The contents, data and information in this datasheet are provided by FCL Components Limited as a service only to its user and only for general information purposes. The use of the contents, data and information provided in this datasheet is at the users’ own risk.
FCL Components has assembled this datasheet with care and will endeavor to keep the contents, data and information correct, accurate, comprehensive, complete and up to date.
FCL Components Limited and affiliated companies do however not accept any responsibility or liability on their behalf, nor on behalf of its employees, for any loss or damage, direct, indirect or consequential, with respect to this datasheet, its contents, data, and information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Nor do FCL Components Limited and affiliated companies accept on their behalf, nor on behalf of its employees, any responsibility or liability with respect to these datasheets, its contents, data, information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Rev. June 17, 2025.