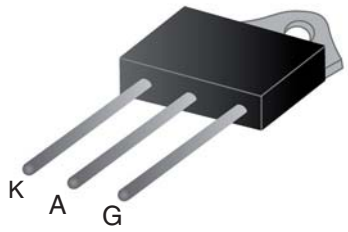
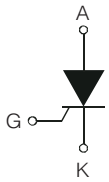
INSULATED STANDARD 50A SCR

INSULATED TO3P





On-State Current
50 Amp

Gate Trigger Current
≤ 80 mA

Off-State Voltage
600 V ÷ 1200 V

FEATURES

- Glass/passivated die junctions
- High current SCR
- Low thermal resistance
- High surge current capability
- Low forward voltage drop
- Solder dip 260ºC, 10s
- Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC
- Meets MSL level 3, per J-STD-020, LF maximum peak of 260º C
- Certified compliance of UL 1557 Standard for Electrically Isolated Semiconductors. Fille reference E320541, Vol. 3

Pb e3 RoHS COMPLIANT

MECHANICAL DATA

- **Case:** INSULATED TO3P. Epoxy meets UL 94V-0 flammability rating.
- **Polarity:** As marked on the body.
- **Terminals:** Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.

TYPICAL APPLICATIONS

Thanks to its triggering levels, the FS50xxxP SCR series is suitable to fit all modes of control, found in applications such as overvoltage crowbar protection, motor control circuits in power tools and kitchen aids, inrush current limiting circuits, capacitive discharge ignition and voltage regulation circuits.

Maximun Ratings and Electrical Characteristics at 25°C

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	RMS On-state Current (full sine wave)	All Conduction Angle, T_C = 75 °C	50	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 60 Hz (tp = 8.3 ms)	610	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 50 Hz (tp = 10 ms)	580	A
I^2t	Fusing Current	tp = 10 ms, Half Cycle	1680	A^2s
I_{GM}	Peak Gate Current	20 µs max. T_j = 125 °C	8	A
$P_{G(AV)}$	Average Gate Power Dissipation	T_j = 125 °C	1	W
dI/dt	Critical rate of rise of on-state current	I_G = 2x I_{GT}, t_r ≤100ns f = 60 Hz, T_j = 125 °C	50	A/µs
T_j	Operating Temperature		(-40 +125)	°C
T_{stg}	Storage Temperature		(-40 +150)	°C

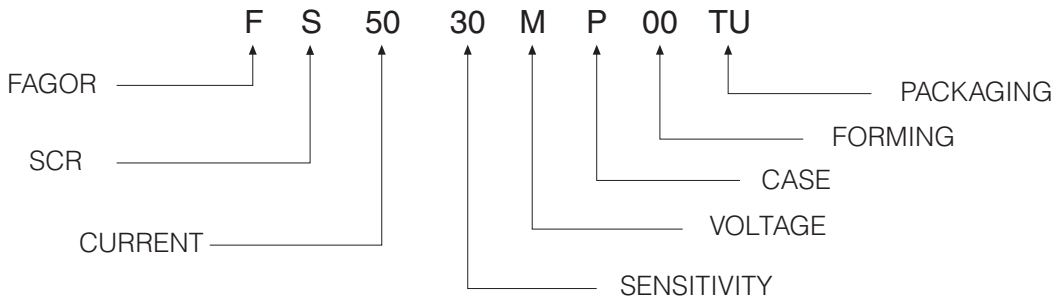
SYMBOL	PARAMETER	VOLTAGE			Unit
		M	N	Q	
V_{DRM}/V_{RRM}	Repetitive Peak Off State Voltage	600	800	1200	V

INSULATED STANDARD 50A SCR

Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS		SENSITIVITY	Unit
				30	
I_{GT}	Gate Trigger Current	V_D = 12 V_{DC}, R_L = 33Ω, T_j = 25 °C	MAX	80	mA
V_{GT}	Gate Trigger Voltage	V_D = 12 V_{DC}, R_L = 33Ω, T_j = 25 °C	MAX	1.3	V
V_{GD}	Gate Non Trigger Voltage	V_D = V_{DRM}, R_L = 3.3 KΩ, T_j = 125 °C	MIN	0.2	V
I_H	Holding Current	I_T =500 mA,Gate open,	MAX	150	mA
I_L	Latching Current	I_G = 1.2 x I_{GT}, T_j = 25 °C	MAX	200	mA
dV/dt	Critical Rate of Voltage Rise	V_D = 0.67 x V_{DRM}, Gate open T_j = 125 °C	MIN	1000	V/µs
V_{TM}	On-state Voltage	I_{TM} = 100 Amp, tp = 380 µs, T_j = 25 °C	MAX	1.9	V
$V_{t(o)}$	Threshold Voltage	T_j = 125 °C	MAX	1	V
r_d	Dynamic resistance	T_j = 125 °C	MAX	8.5	mΩ
I_{DRM}/I_{RRM}	Off-State Leakage Current	V_{DRM}=V_{RRM} T_j = 125 °C	MAX	5	mA
		T_j = 25 °C	MAX	10	µA
$R_{th(j-c)}$	Thermal Resistance Junction-Case D.C.	D.C.		0.9	°C/W

Part Number Information

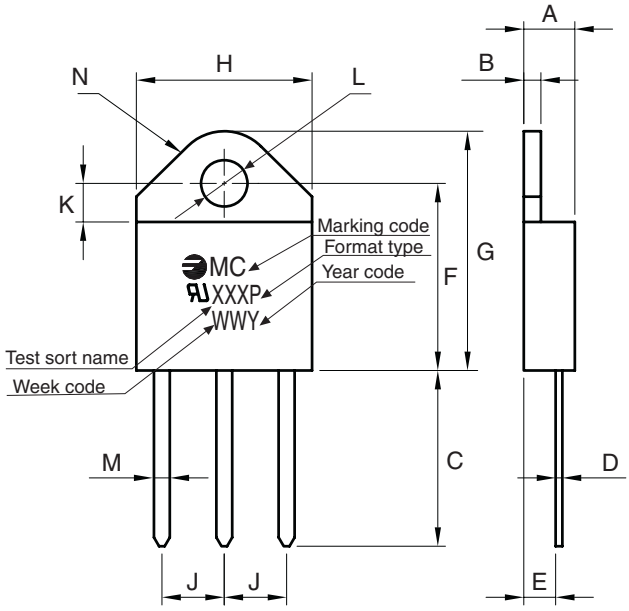


INSULATED STANDARD 50A SCR

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FS5030MP 00TU	TU	TUBE	450	4.50

Package Outline Dimensions: (mm) INSULATED TO3P



DIMENSIONS (mm)

	A	B	C	D	E	F	G	H	J	K	L	M	N
MAX	4.6	1.55	15.6	0.7	2.9	16.5	21.1	15.5	5.65	3.65	4.17	1.40	
TYP													4.60
MIN	4.4	1.45	14.35	0.5	2.7	15.8	20.4	15.1	5.4	3.4	4.08	1.20	

Mounting Torque	**0.8 N.m**

Ratings and Characteristics (Ta 25 ºC unless otherwise noted)

Fig. 1: Maximum power dissipation versus average on-state current

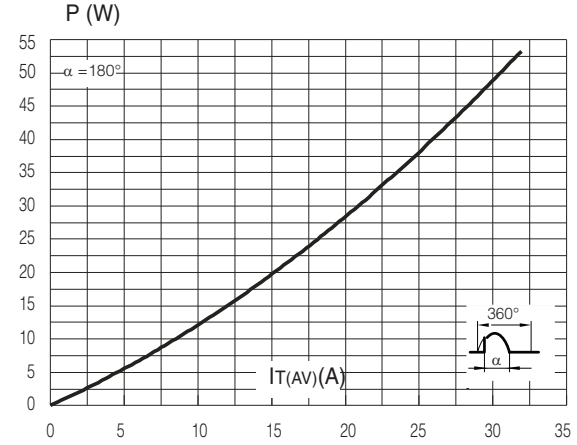


Fig. 2: Average and D.C. on-state current versus case temperature

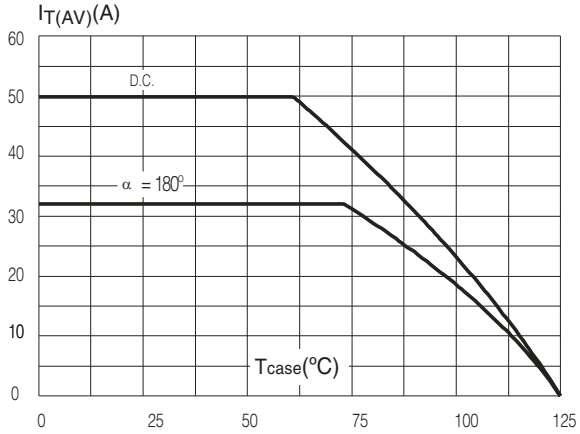


Fig. 3: Relative variation of thermal impedance versus pulse duration

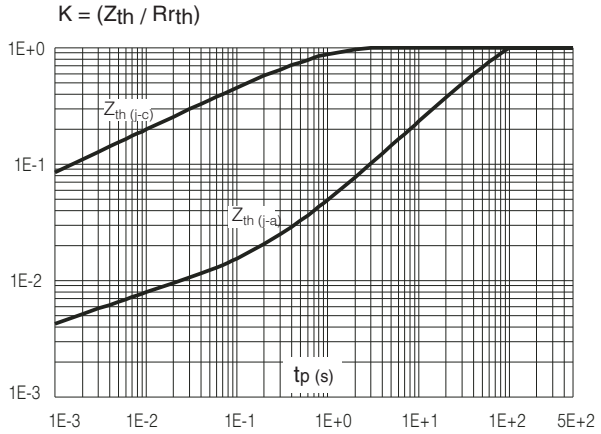
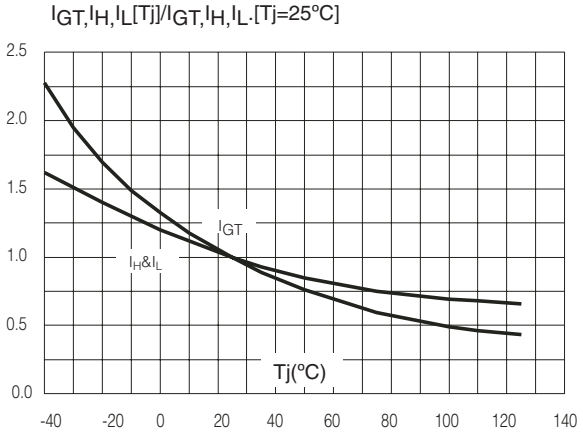


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature



INSULATED STANDARD 50A SCR

Fig. 5: Surge peak on-state current versus number of cycles

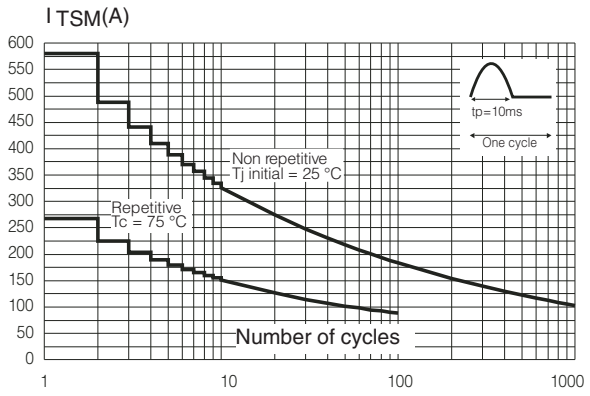


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with widt tp < 10 ms, and corresponding values of I^2t

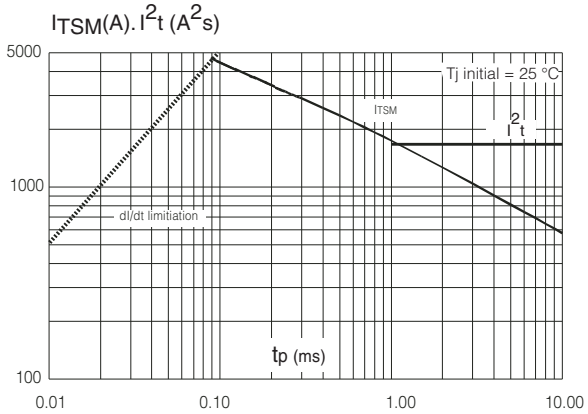
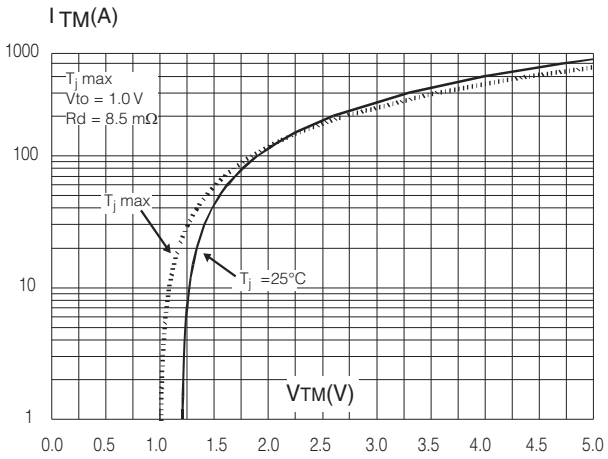


Fig. 7: On-state characteristics (maximum values)



Disclaimer

All product, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.

Fagor Electrónica, S.Coop., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Fagor"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Fagor makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Fagor disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Fagor's knowledge of typical requirements that are often placed on Fagor products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Fagor's terms and conditions of purchase, including but nos limited to the warranty expressed therein.

Except as expressly indicated in writing. Fagor products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Fagor product could result in personal injury or death. Customers using or selling Fagor products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Fagor and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attomeys fees, even if such claim alleges that Fagor or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Fagor personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Fagor, Product names and markings noted herein may be trademarks of their respective owners.