

03P4MG, 03P6MG

300 mA HIGH-WITHSTANDING-VOLTAGE MOLD SCR

DESCRIPTION

The 03P4MG and 03P6MG are P-gate fully diffused mold SCRs with an average on-state current of 300 mA. The repeat peak off-state voltages (and reverse voltages) are 400 and 600 V.

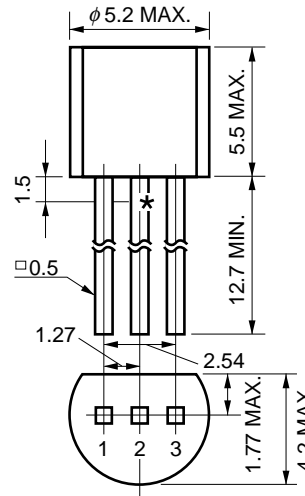
FEATURES

- 400 and 600 V high-withstanding-voltage series of products
- The non-repetitive withstanding voltage is a high 700 V, making it easy to harmonize the rise voltage of the surge absorber.
- High-sensitivity thyristor ($I_{GT} = 3$ to $50 \mu A$)
- Employs flame-retardant epoxy resin (UL94V-0)

APPLICATIONS

Leakage breakers, SSRs, various type of alarms, consumer electronic equipments and automobile electronic components

PACKAGE DRAWING (Unit: mm)



Electrode connection

- 1: Gate
- 2: Anode
- 3: Cathode

*T_c test bench-mark
Standard weight: 0.3 g

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Ratings		Unit	Remarks
		03P4MG	03P6MG		
Non-repetitive Peak Reverse Voltage	V _{RSM}	700	700	V	R _{GK} = 1 kΩ
Non-repetitive Peak Off-state Voltage	V _{DSM}	700	700	V	R _{GK} = 1 kΩ
Repetitive Peak Reverse Voltage	V _{RRM}	400	600	V	R _{GK} = 1 kΩ
Repetitive Peak Off-state Voltage	V _{DRM}	400	600	V	R _{GK} = 1 kΩ
Average On-state Current	I _{T(AV)}	300 (T _A = 30°C, Single half-wave, θ = 180°)		mA	Refer to Figure 10.
Effective On-state Current	I _{T(RMS)}	470		mA	—
★ Surge On-state Current	I _{TSM}	8 (f = 50 Hz, Sine half-wave, 1 cycle)		A	Refer to Figure 2.
Fusing Current	$\int i^2 dt$	0.15 (1 ms ≤ t ≤ 10 ms)		A ² s	—
Critical Rate of On-state Current of Rise	di _T /dt	20		A/μs	—
Peak Gate Power Dissipation	P _{GM}	100 (f ≥ 50 Hz, Duty ≤ 10%)		mW	Refer to Figure 3.
Average Gate Power Dissipation	P _{G(AV)}	10		mW	Refer to Figure 3.
Peak Gate Forward Current	I _{FGM}	100 (f ≥ 50 Hz, Duty ≤ 10%)		mA	—
Peak Gate Reverse Voltage	V _{RGM}	6		V	—
Junction Temperature	T _j	-40 to +125		°C	—
Storage Temperature	T _{stg}	-55 to +150		°C	—

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ELECTRICAL CHARACTERISTICS (T_j = 25°C, R_{θK} = 1 kΩ)

Parameter	Symbol	Conditions	Specifications			Unit	Remarks	
			MIN.	TYP.	MAX.			
Non-repetitive Peak Reverse Current	I _{RRM}	V _{RM} = V _{RDM}	T _j = 25°C	-	-	10	μA	-
			T _j = 125°C	-	-	100	μA	-
Non-repetitive Peak Off-state Current	I _{DRM}	V _{DM} = V _{DRM}	T _j = 25°C	-	-	10	μA	-
			T _j = 125°C	-	-	100	μA	-
Critical Rate-of-rise of Off-state Voltage	dV _D /dt	T _j = 125°C, V _{DM} = $\frac{2}{3}$ V _{DRM}	10	-	-	V/μs	-	
On-state Voltage	V _T	I _T = 4 A	-	-	2.2	V	Refer to Figure 1.	
Gate Trigger Current	I _{GT}	V _{DM} = 6 V, R _L = 100 Ω	3	-	50	μA	-	
Gate Trigger Voltage	V _{GT}	V _{DM} = 6 V, R _L = 100 Ω	-	-	0.8	V	-	
Gate Non-trigger Voltage	V _{GD}	T _j = 125°C, V _{DM} = $\frac{V_{DRM}}{2}$	0.2	-	-	V	-	
Holding Current	I _H	V _{DM} = 24 V, I _{TM} = 4 A	-	-	5	mA	-	
Turn-off Time	t _q	T _j = 125°C, I _T = 200 mA, dI _R /dt = 15 A/μs, V _R ≥ 25 V, V _{DM} = $\frac{2}{3}$ V _{DRM} , dV _D /dt = 10 V/μs	-	60	-	μs	-	
Thermal Resistance	R _{th(j-c)}	Junction-to-case DC	-	-	50	°C/W	Refer to Figure 14.	
	R _{th(j-a)}	Junction-to-ambient DC	-	-	230	°C/W	Refer to Figure 14.	

TYPICAL CHARACTERISTICS (T_A = 25°C)

Figure 1. i_r vs. v_T Characteristics

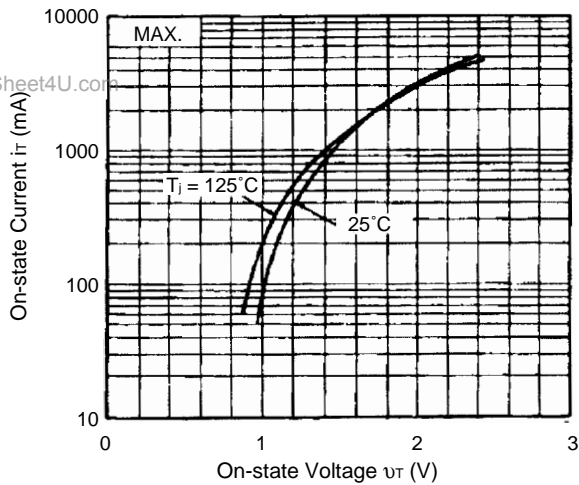


Figure 2. I_{rSM} Rating

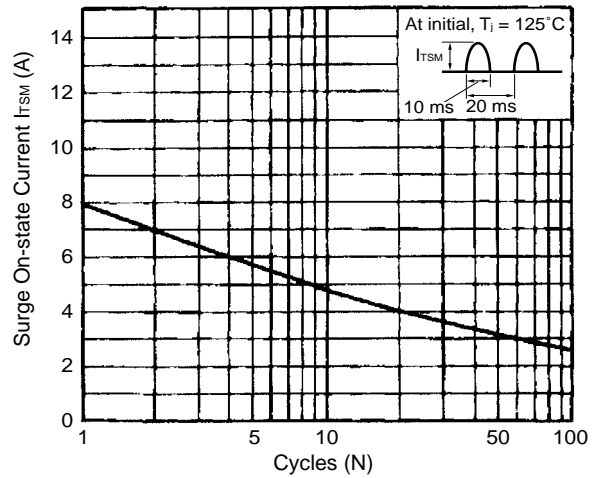


Figure 3. Gate Rating

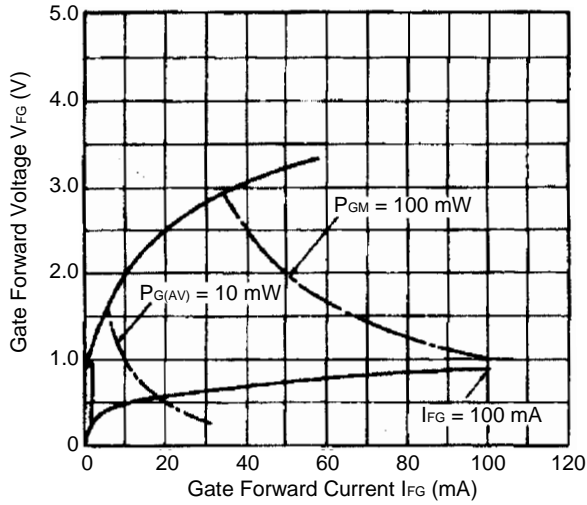


Figure 4. Example of Gate Characteristics

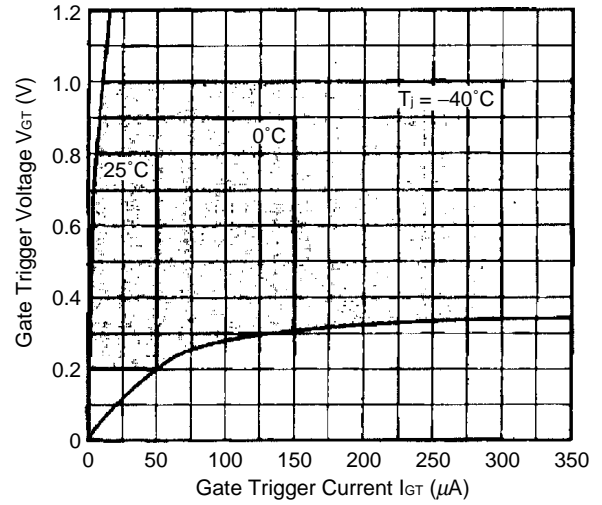


Figure 5. IGT vs. TA Example of Characteristics

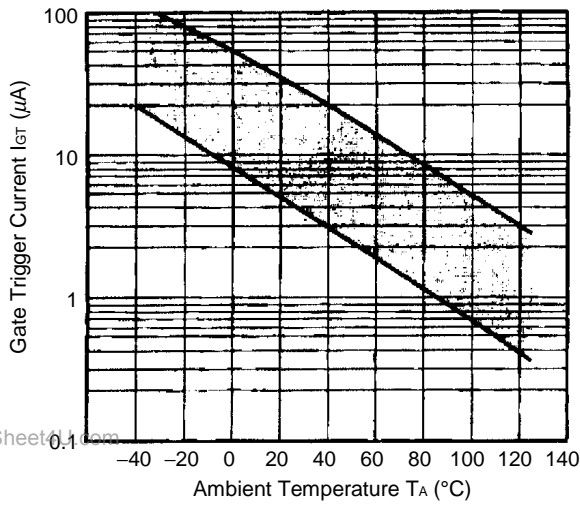


Figure 6. VGT vs. TA Example of Characteristics

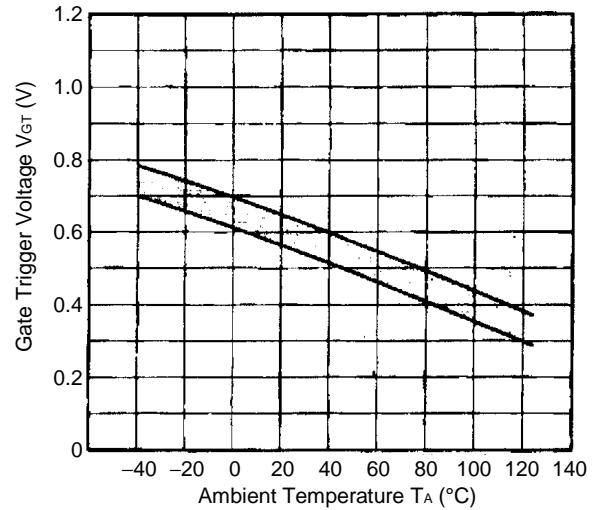


Figure 7. IGS vs. τ Example of Characteristics

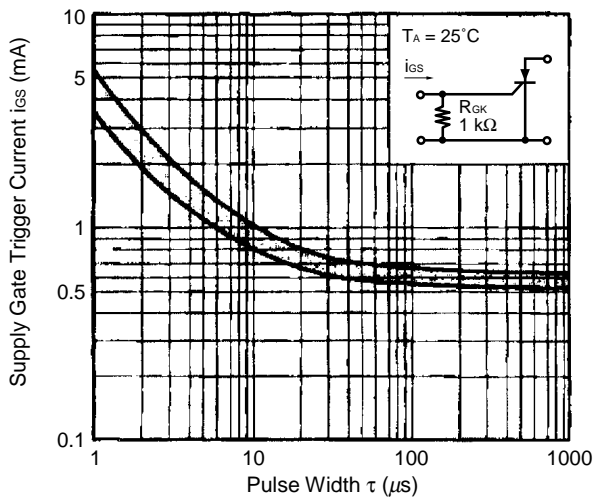


Figure 8. VGT vs. τ Example of Characteristics

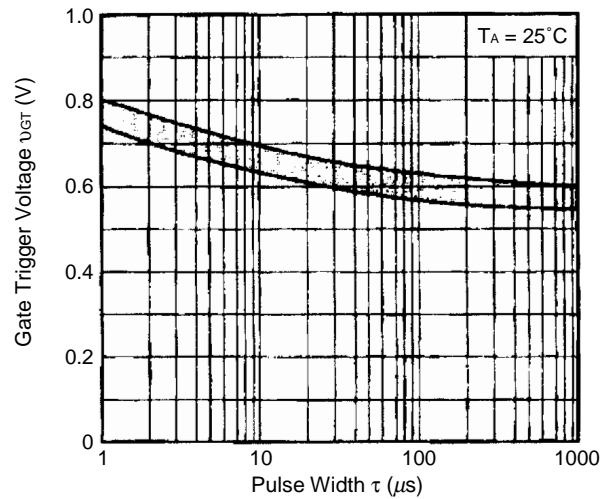


Figure 9. $P_{T(AV)}$ vs. $I_{T(AV)}$ Characteristics

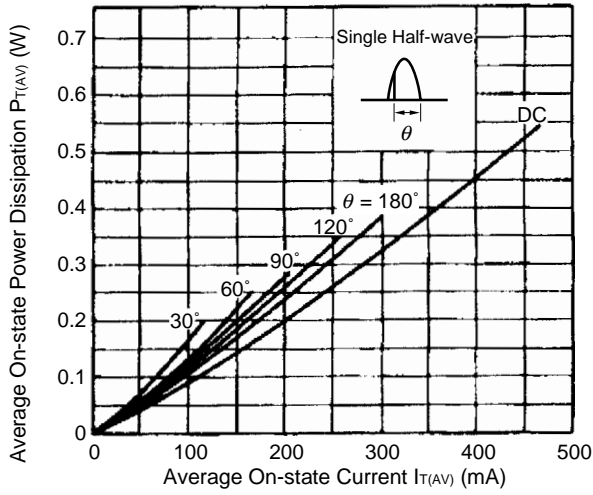


Figure 10. T_A vs. $I_{T(AV)}$ Characteristics

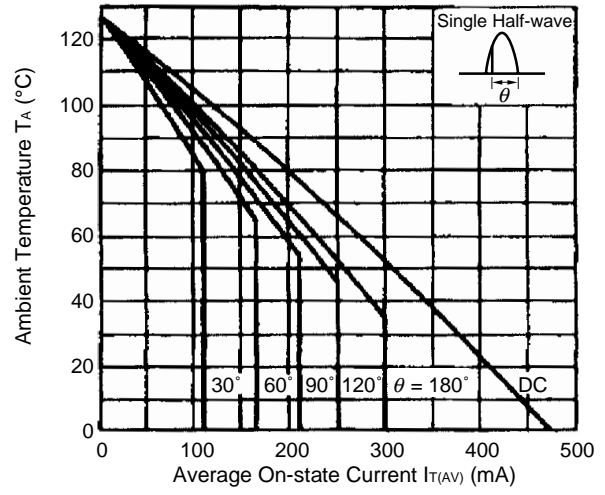


Figure 11. $P_{T(AV)}$ vs. $I_{T(AV)}$ Characteristics

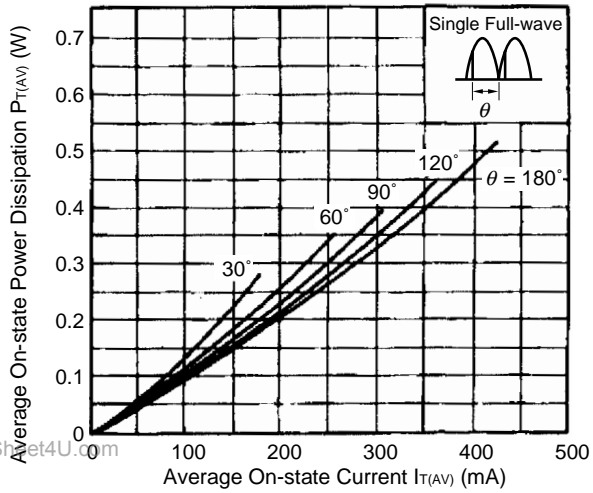


Figure 12. T_A vs. $I_{T(AV)}$ Characteristics

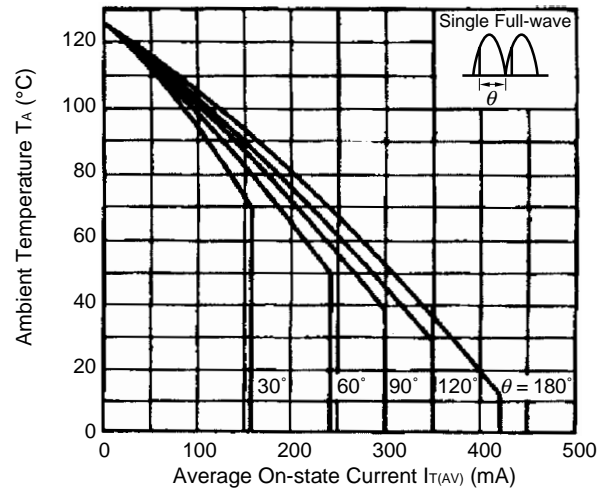


Figure 13. I_H vs. T_A Example of Characteristics

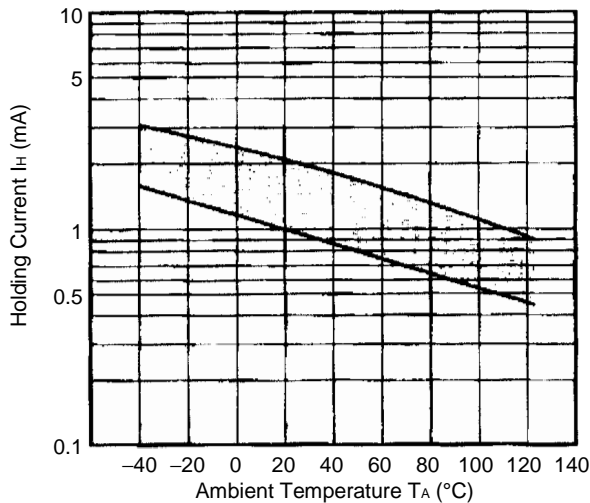
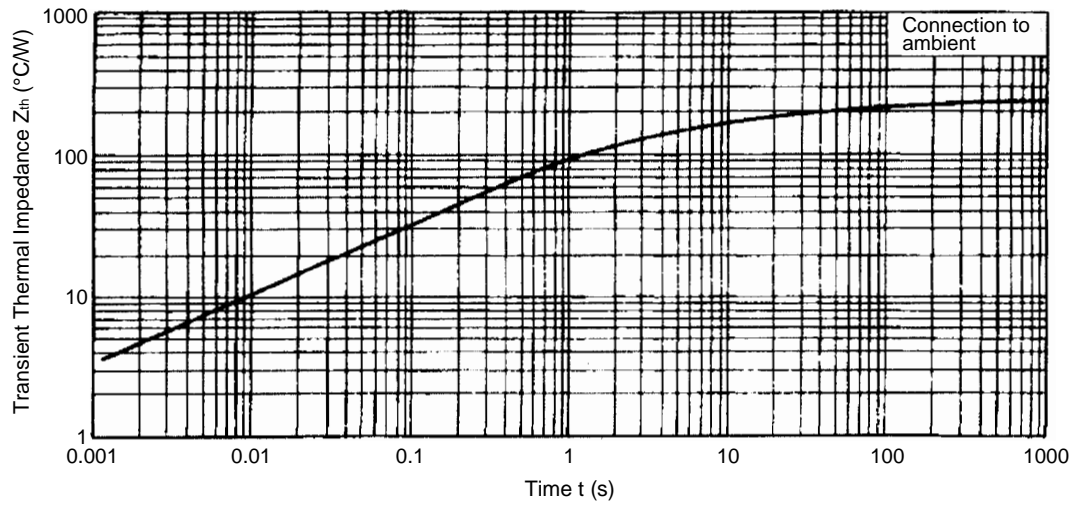


Figure 14. Z_{th} Characteristics



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