

TK26

PHASE CONTROL THYRISTOR

APPLICATIONS

- High Power Drives.
- High Voltage Power Supplies.
- DC Motor Control.
- Welding.
- Battery Chargers.

KEY PARAMETERS

V_{DRM}	2000V
$I_{T(AV)}$	180A
I_{TSM}	4000A
dV/dt^*	200V/μs
di/dt	500A/μs

*Higher dV/dt selections available

FEATURES

- High Surge Capability.

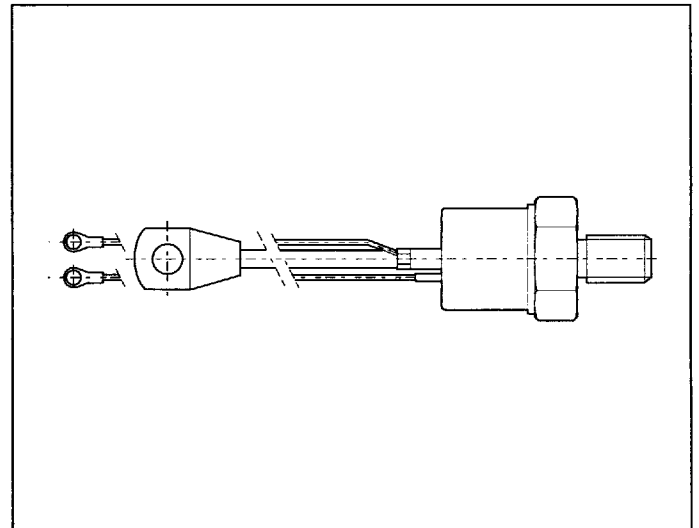
VOLTAGE RATINGS

Type Number	Repetitive Peak Voltages V_{DRM} V_{RRM}	Conditions
TK26 20 M or K	2000	$T_{vj} = 0^\circ$ to 125°C , $I_{DRM} = I_{RRM} = 100\text{mA}$, $V_{DRM}^p V_{RRM}^p t_p = 10\text{ms}$, V_{DSM} & $V_{RSM} =$ V_{DRM} & $V_{RRM} + 100\text{V}$ Respectively
TK26 18 M or K	1800	
TK26 16 M or K	1600	
TK26 14 M or K	1400	

Lower voltage grades available.

For 3/4" 16 UNF thread add K to type number, e.g. TK26 18K.

For M16 thread add M to type number, e.g. TK26 14M.



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CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{T(AV)}$	Mean on-state current	Half wave resistive load, $T_{case} = 80^\circ\text{C}$	180	A
$I_{T(RMS)}$	RMS value	$T_{case} = 80^\circ\text{C}$	275	A
I_T	Continuous (direct) on-state current	$T_{case} = 80^\circ\text{C}$	220	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	3.2	kA
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM} - 1/4$ sine	51.2×10^3	A ² s
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	4.0	kA
I^2t	I^2t for fusing	$V_R = 0$	80×10^3	A ² s

THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions	Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	dc	-	0.13	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Mounting torque 35.0Nm with mounting compound	-	0.06	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	On-state (conducting)	-	125	$^{\circ}C$
		Reverse (blocking)	-	125	$^{\circ}C$
T_{stg}	Storage temperature range		-40	150	$^{\circ}C$
-	Mounting torque		30.0	35.0	Nm

DYNAMIC CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units	
V_{TM}	Maximum on-state voltage	At 450A peak, $T_{case} = 25^{\circ}C$	-	1.85	V	
I_{RRM}/I_{DRM}	Peak reverse and off-state current	At V_{RRM}/V_{DRM} , $T_{case} = 125^{\circ}C$	-	25	mA	
dV/dt	Maximum linear rate of rise of off-state voltage	To 60% V_{DRM} , $T_j = 125^{\circ}C$, Gate open circuit	-	200	V/ μ s	
di/dt	Rate of rise of on-state current	Gate source 20V, 20 Ω $t_r \leq 0.5\mu$ s, $T_j = 125^{\circ}C$	Repetitive 50Hz	-	500	A/ μ s
			Non-repetitive	-	800	A/ μ s
$V_{T(TO)}$	Threshold voltage	At $T_{vj} = 125^{\circ}C$	-	1.25	V	
r_T	On-state slope resistance	At $T_{vj} = 125^{\circ}C$	-	1.33	m Ω	
t_{gd}	Delay time	$V_D = 300V$, $I_G = 1A$, $I_T = 50A$, $di/dt = 50A/\mu$ s, $di_G/dt = 1A/\mu$ s, $T_j = 25^{\circ}C$	-	1.5	μ s	
I_L	Latching current	$T_j = 25^{\circ}C$, $V_D = 12V$	-	-	mA	
I_H	Holding current	$T_j = 25^{\circ}C$, $V_D = 12V$, $I_{TM} = 1A$	-	50	mA	

GATE TRIGGER CHARACTERISTICS AND RATINGS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{GT}	Gate trigger voltage	$V_{DRM} = 12V$, $T_{case} = 25^{\circ}C$, $R_L = 6\Omega$	-	3.0	V
I_{GT}	Gate trigger current	$V_{DRM} = 12V$, $T_{case} = 25^{\circ}C$, $R_L = 6\Omega$	-	200	mA
V_{GD}	Gate non-trigger voltage	At V_{DRM} , $T_{case} = 125^{\circ}C$, $R_L = 1k\Omega$	-	0.2	V
V_{FGM}	Peak forward gate voltage	Anode positive with respect to cathode	-	30	V
V_{FGN}	Peak forward gate voltage	Anode negative with respect to cathode	-	0.25	V
V_{RGM}	Peak reverse gate voltage		-	5	V
I_{FGM}	Peak forward gate current	Anode positive with respect to cathode	-	4	A
P_{GM}	Peak gate power	-	-	16	W
$P_{G(AV)}$	Mean gate power		-	3	W

CURVES

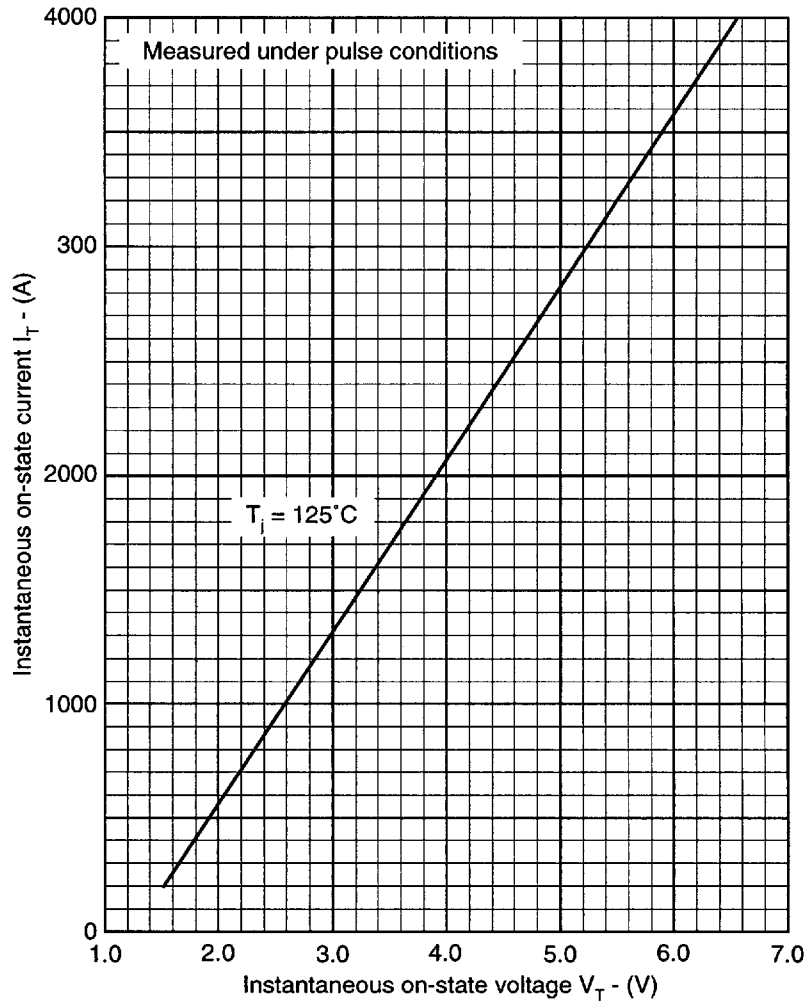
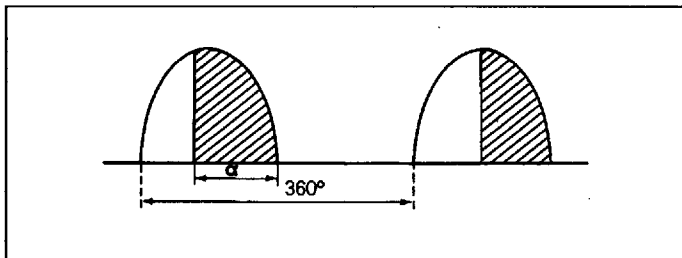
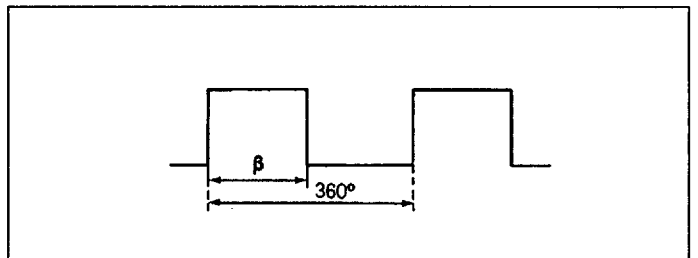


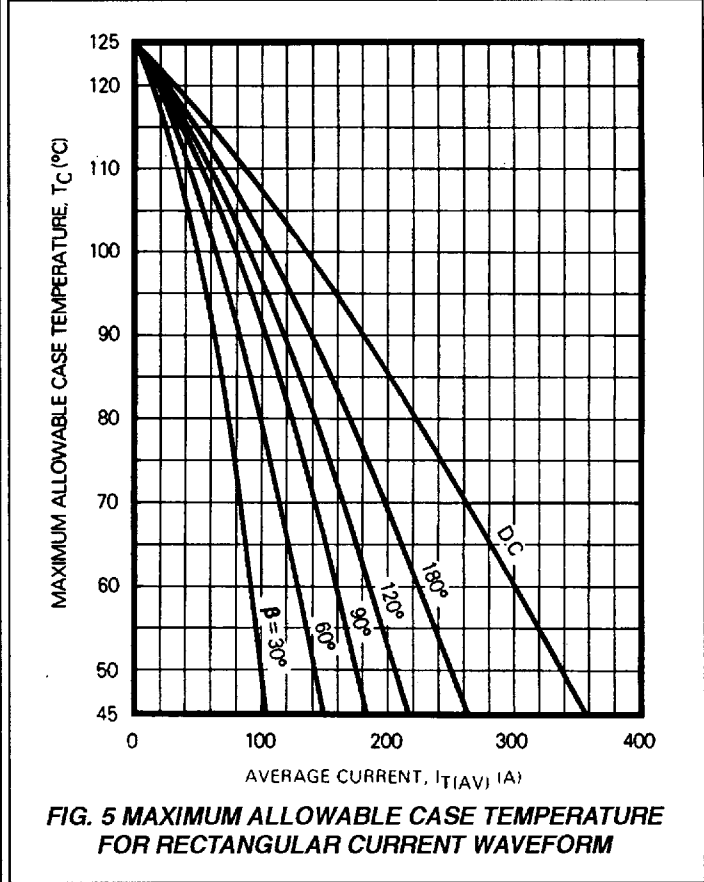
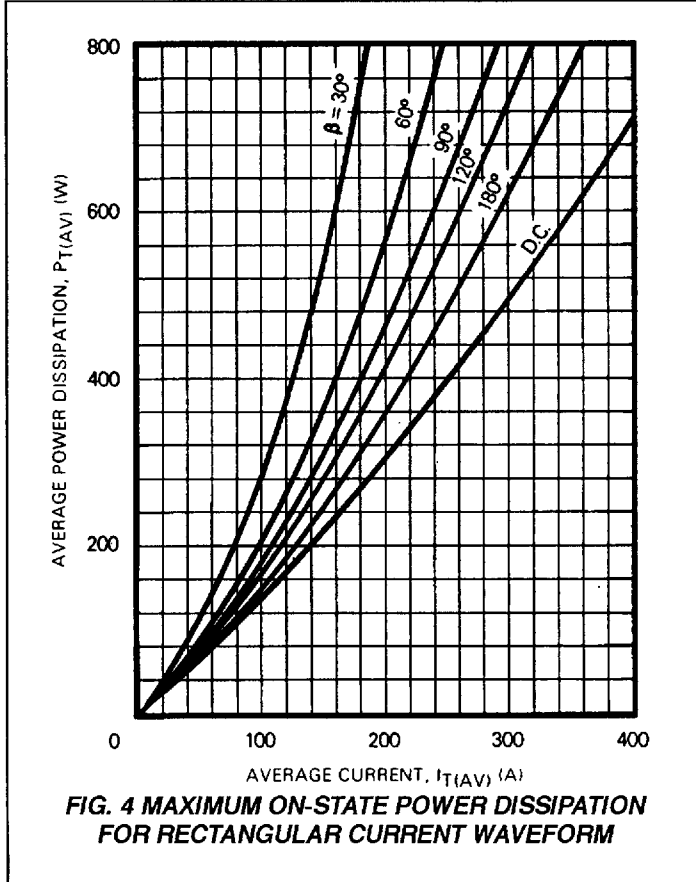
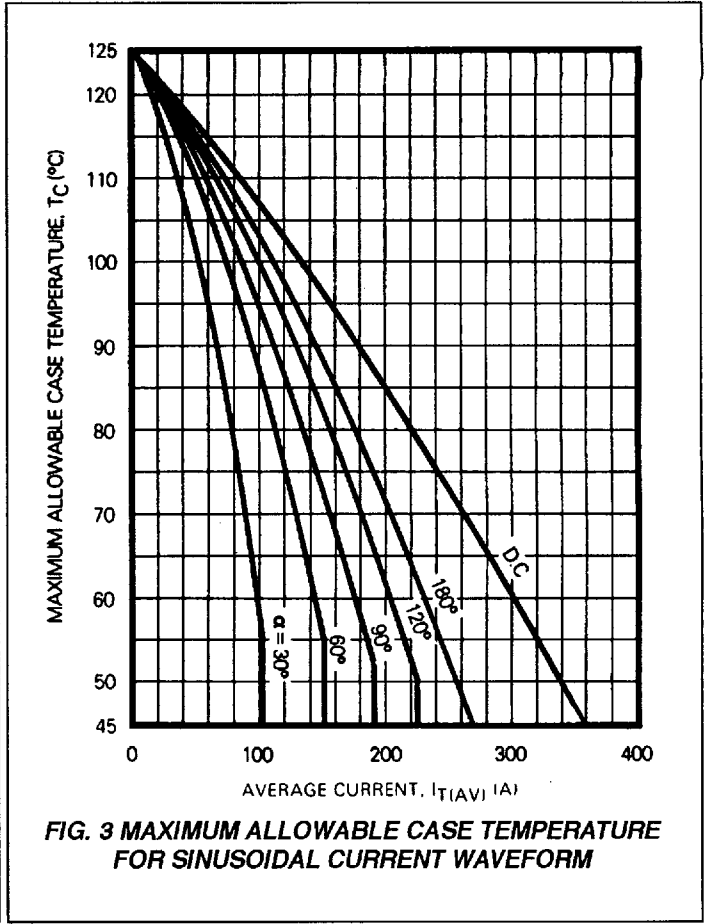
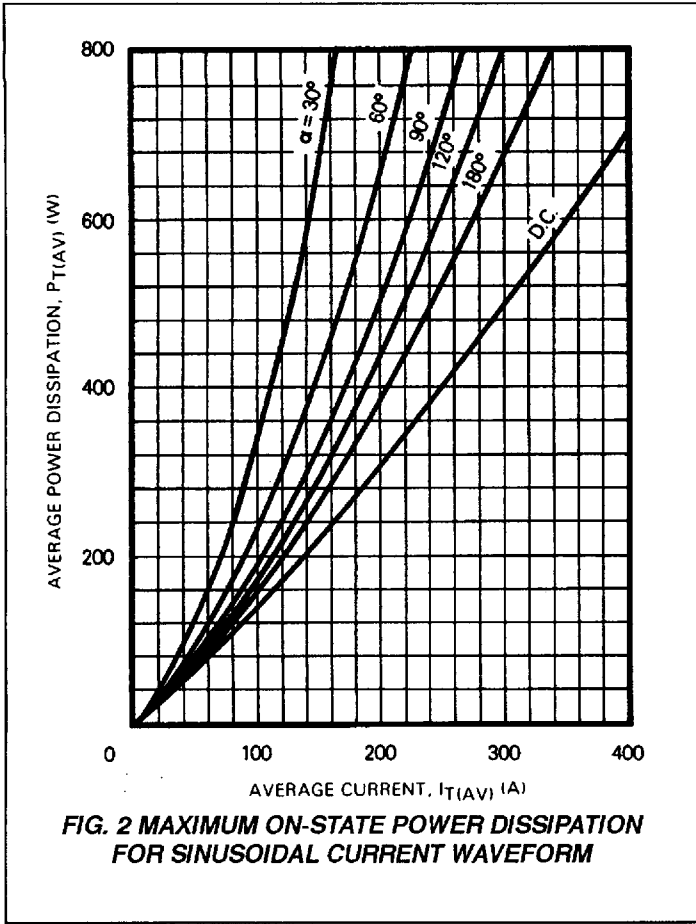
FIG. 1 MAXIMUM (LIMIT) ON-STATE CHARACTERISTICS

SINUSOIDAL CURRENT WAVEFORM



RECTANGULAR CURRENT WAVEFORM





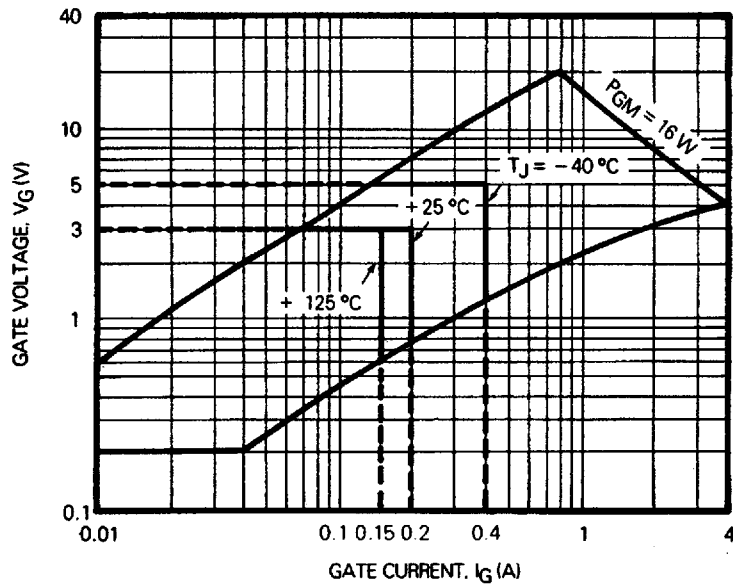


FIG. 6 GATE TRIGGER CHARACTERISTICS

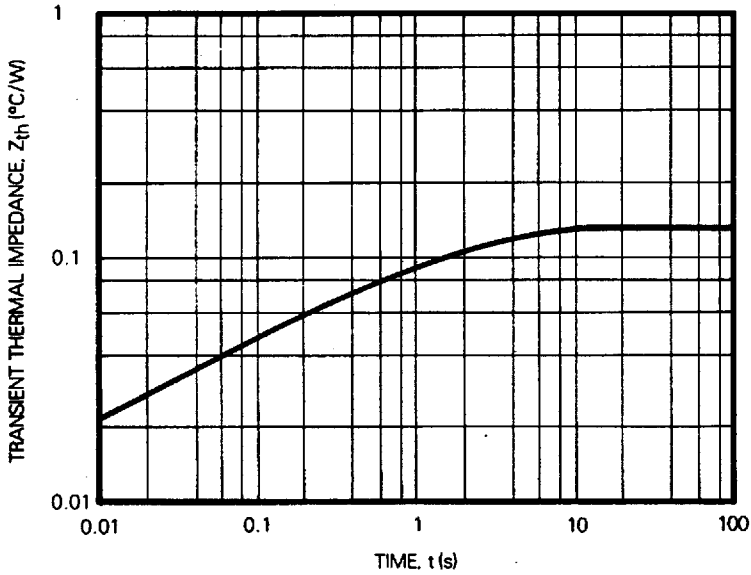


FIG. 7 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE

Conduction angle (α, β)	Effective thermal Resistance ($^\circ\text{C/W}$) Junction to case	
	Sinusoidal	Rectangular
180°	0.140	0.156
120°	0.146	0.176
90°	0.156	0.195
60°	0.169	0.221
30°	0.208	0.260

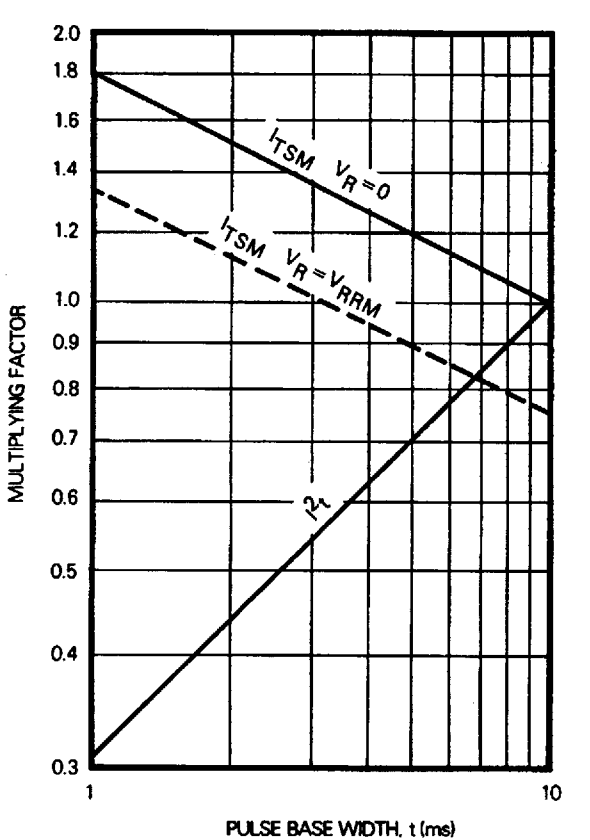


FIG. 8 MULTIPLYING FACTOR FOR NON-REPETITIVE SUB-CYCLE SURGE ON-STATE CURRENT AND I_{2t} RATING

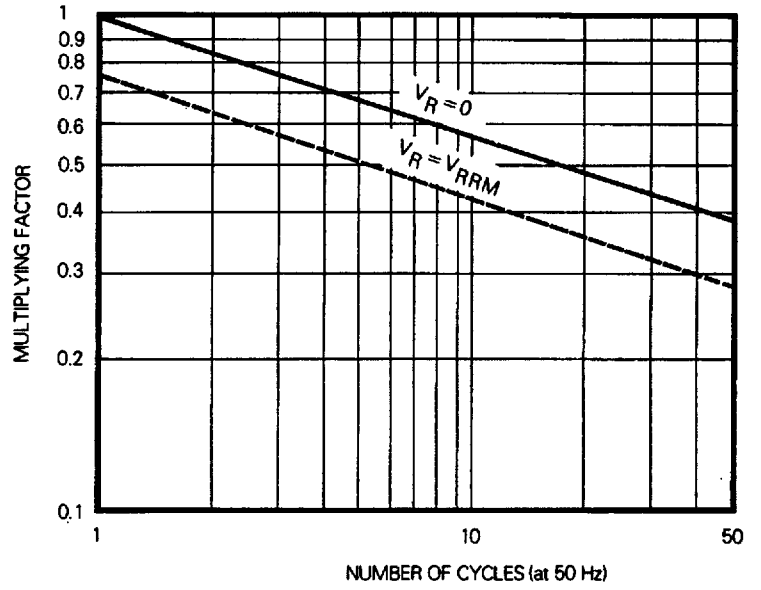
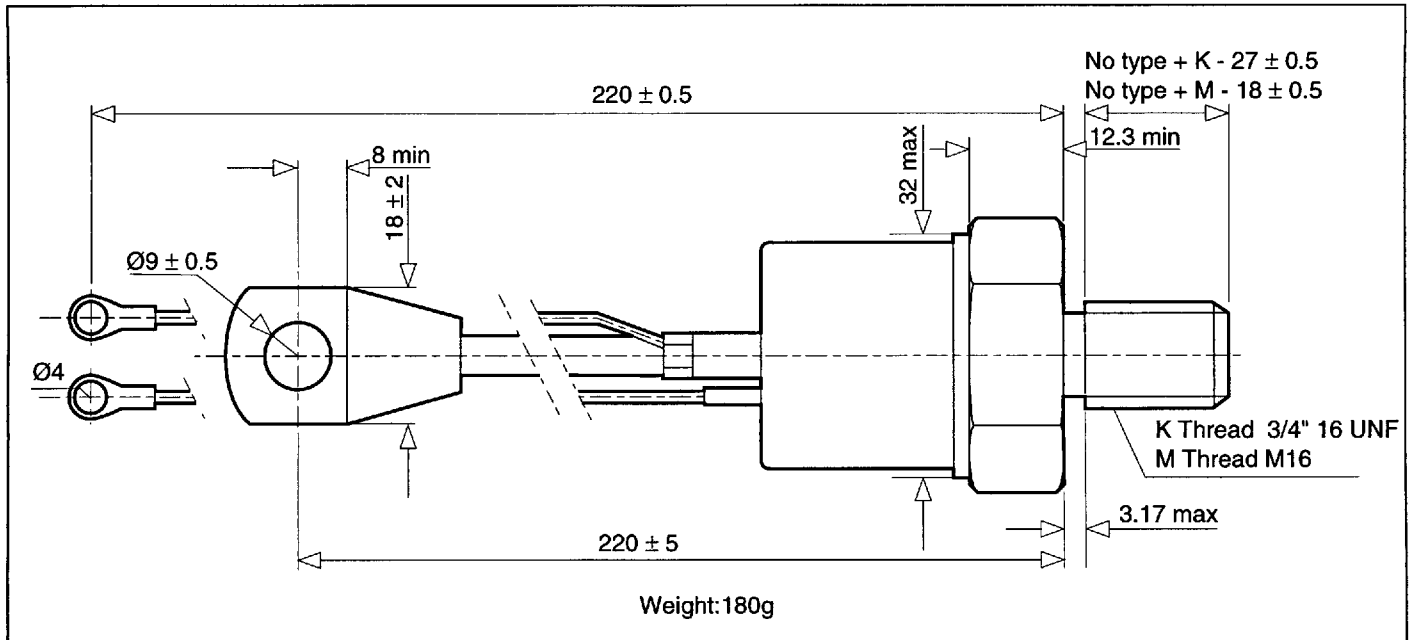


FIG. 9 MULTIPLYING FACTOR FOR NON-REPETITIVE SURGE ON-STATE CURRENT

PACKAGE DETAILS - TO93

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.

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