

16RIA, 25RIA SERIES

Power Silicon Controlled Rectifiers

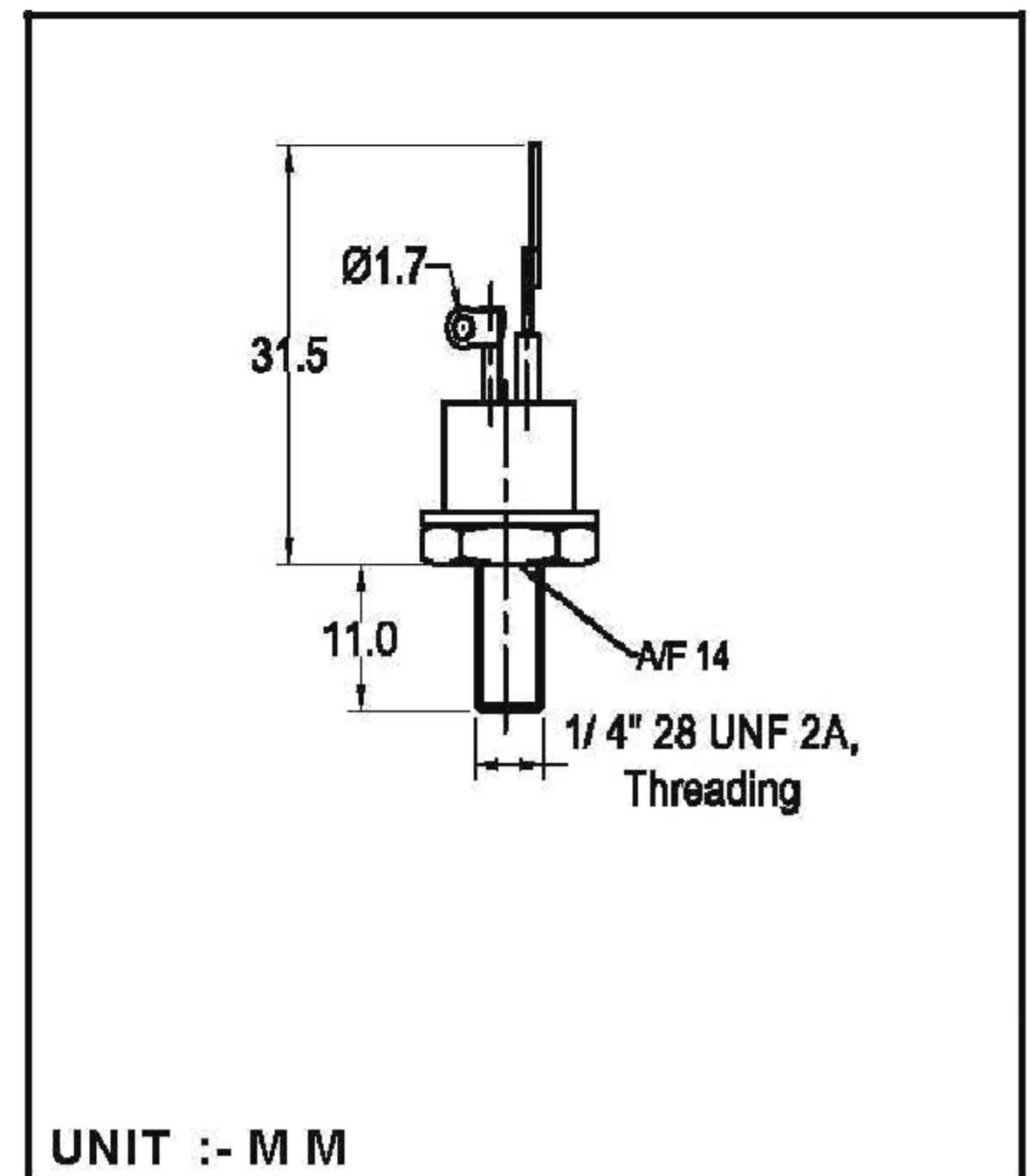
Types: 16RIA 10 to 16RIA 160, 25RIA 10 to 25RIA 160

FEATURES

- ⊕ All diffused series / UNF threading.
- ⊕ Full current rating @ 85°C case temperature.
- ⊕ High di/dt and dv/dt capabilities.
- ⊕ Excellent dynamic characteristics.
- ⊕ Glass passivation for high reliability.

THERMAL MECHANICAL SPECIFICATIONS

R_{thjc}	Maximum thermal resistance junction to case DC operation	16RIA 1.15°C/W	25RIA 0.75°C/W
R_{thcs}	Contact thermal resistance case-to-sink	0.35°C/W	
T_J	Junction operating temp. range	-40°C to +125°C	
T_{stg}	Storage temperature range	-40°C to +125°C	
	Mounting torque (Non-lubricated threads)	0.2 M-Kg min. 0.3 M-Kg max.	
	Approximate weight	14 gms.	



ELECTRICAL RATINGS

TYPE	16RIA / 25RIA	10	20	40	60	80	100	120	160
V_{DRM}	Max. repetitive peak off state voltage (V) (1)	100	200	400	600	800	1000	1200	1600
V_{RRM}	Max. repetitive peak reverse voltage (V) (2)	100	200	400	600	800	1000	1200	1600
V_{RSM}	Max. non-repetitive peak reverse voltage (V) (3)	150	300	500	700	900	1100	1300	1700
I_{RM} & I_{DM}	Max. peak reverse & off state current @ rated V_{DRM} & V_{RRM} 125°C -mA	20	10	10	10	10	10	10	10

SILICON CONTROLLED RECTIFIERS

16 RIA, 25 RIA SERIES

ELECTRICAL SPECIFICATIONS

		16RIA	25RIA
$I_{T(RMS)}$	Maximum RMS on-state current (A)	25	40
$I_{T(AV)}$	Maximum average on-state current 180° conduction case temperature 85°C (A)	16	25
I_{TSM}	Maximum peak one cycle non-repetitive surge current : (A) No voltage reapplied 50 Hz.	285	350
I^2t	Max. I^2t for fusing (A ² Sec)	406	612
V_{TM}	Maximum peak on-state voltage @ 25°C, 180° conduction $I_{T(AV)}$ (V) 16A (50A peak) 25A (78A peak)	1.75	1.70
I_H	Maximum holding current @ 25°C (mA)	100	
I_L	Maximum latching current @ 25°C	200	
tgt	Typical turn-on time $T_J = 25^\circ\text{C}$ (μ sec)	0.9	
trr	Typical reverse recovery time $T_J = 125^\circ\text{C}$ (μ sec)	4.0	
tq	Typical turn-off time $T_J = 125^\circ\text{C}$ (μ sec)	110	
dv/dt	Critical rate of rise of off state voltage $T_J = 125^\circ\text{C}$	300	
di/dt	Maximum repetitive rate of rise of turned on current	100	
$V_{T(TO)}$	Threshold Voltage	0.99 V	
rT	Onstate slop resistance	11.73 mΩ	

TRIGGERING

P_{GM}	Maximum peak gate power 125°C (W)	8.0
$P_{G(AV)}$	Maximum average gate power 125°C (W)	2.0
I_{GM}	Maximum peak positive gate current 125°C (A)	1.5
$-V_{GM}$	Maximum peak negative gate voltage 125°C (V)	10.0
I_{GT}	Maximum required gate current to trigger (mA)	60.0
V_{GT}	Maximum required gate voltage to trigger (V)	2.0
V_{GD}	Maximum required gate voltage that will not trigger 125°C V	0.2

SILICON CONTROLLED RECTIFIERS

ORDER INFORMATION TABLE

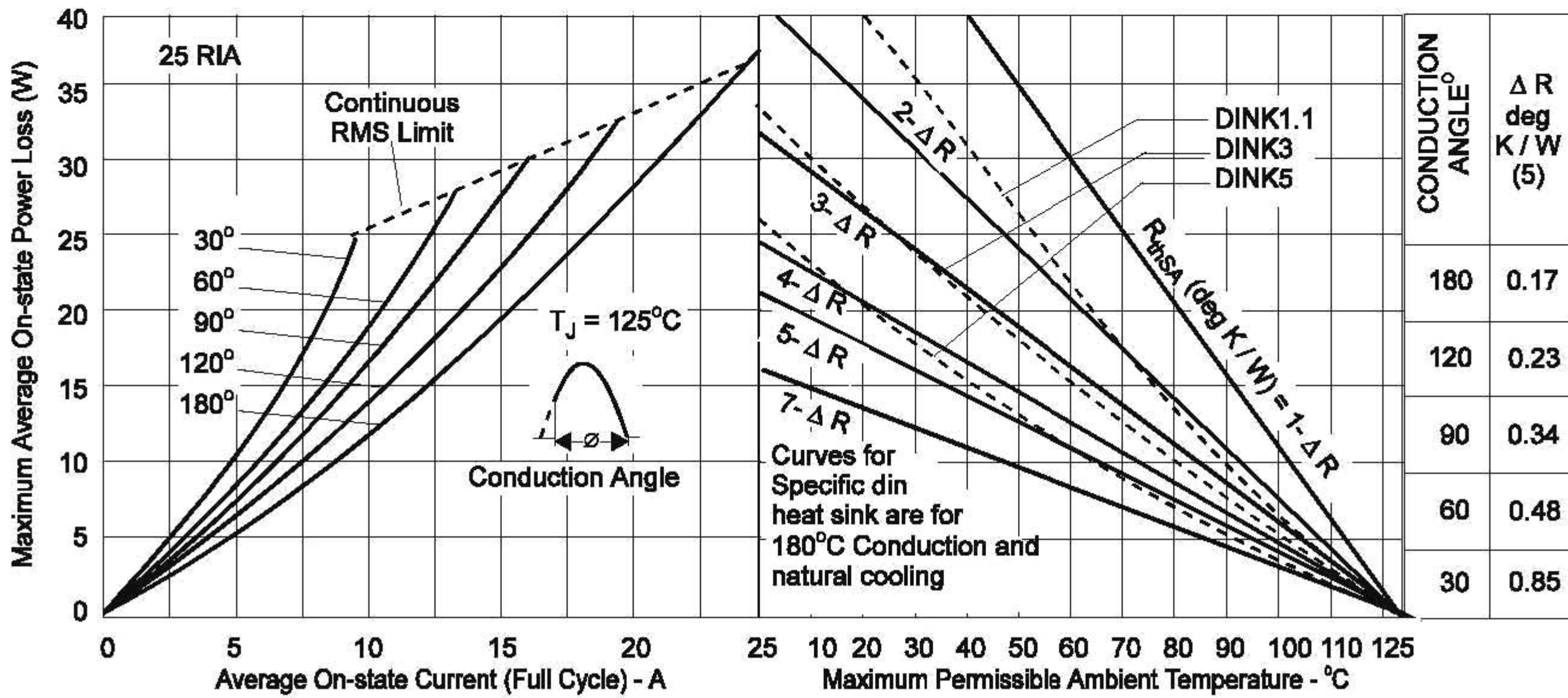
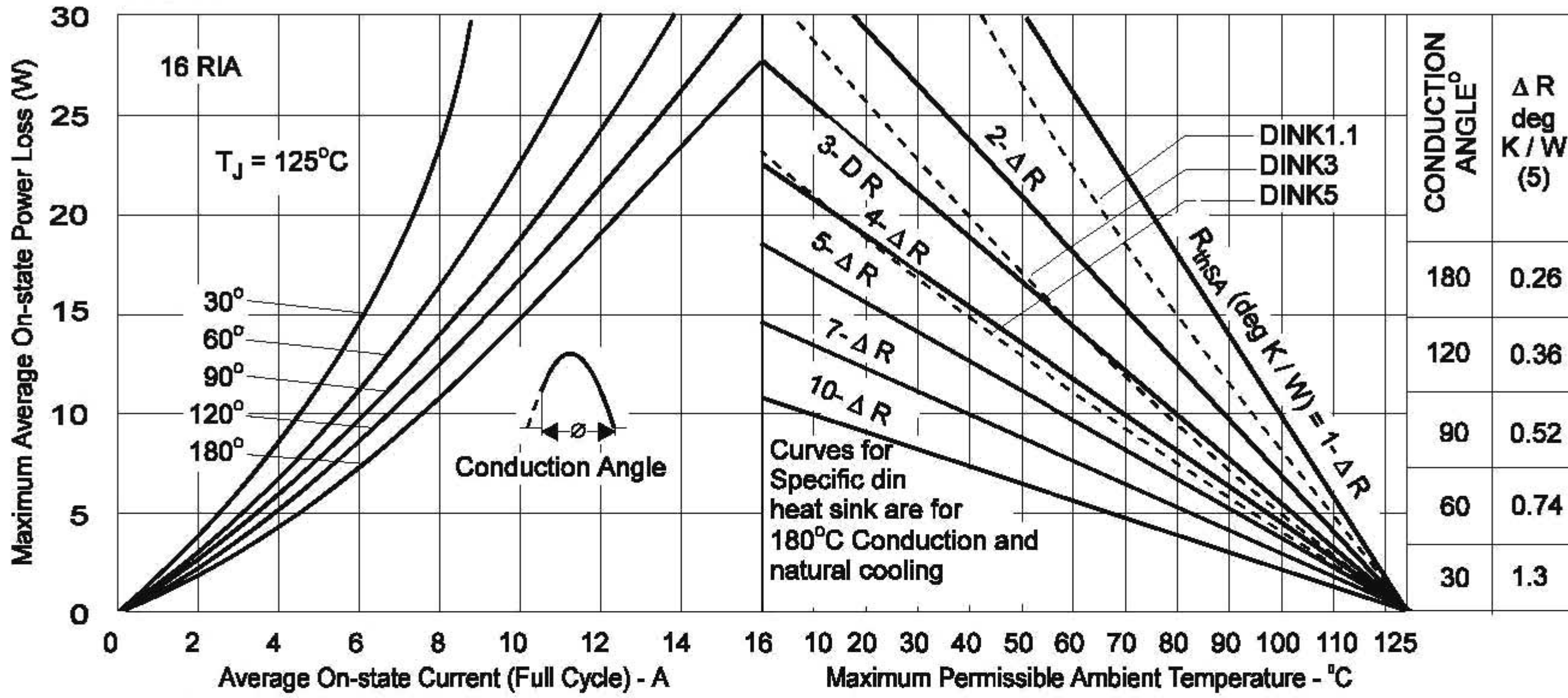
16/25	RIA	40	M
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① ② ③ ④

- ① - Current Code
16/25 - without external lead.
- with external lead.
- ② - Essential part number
- ③ - Voltage Rating (See table)
- ④ - None - Stud 1/4" 28UNF 2A Threading
M - Stud M6 x 1P Metric threading

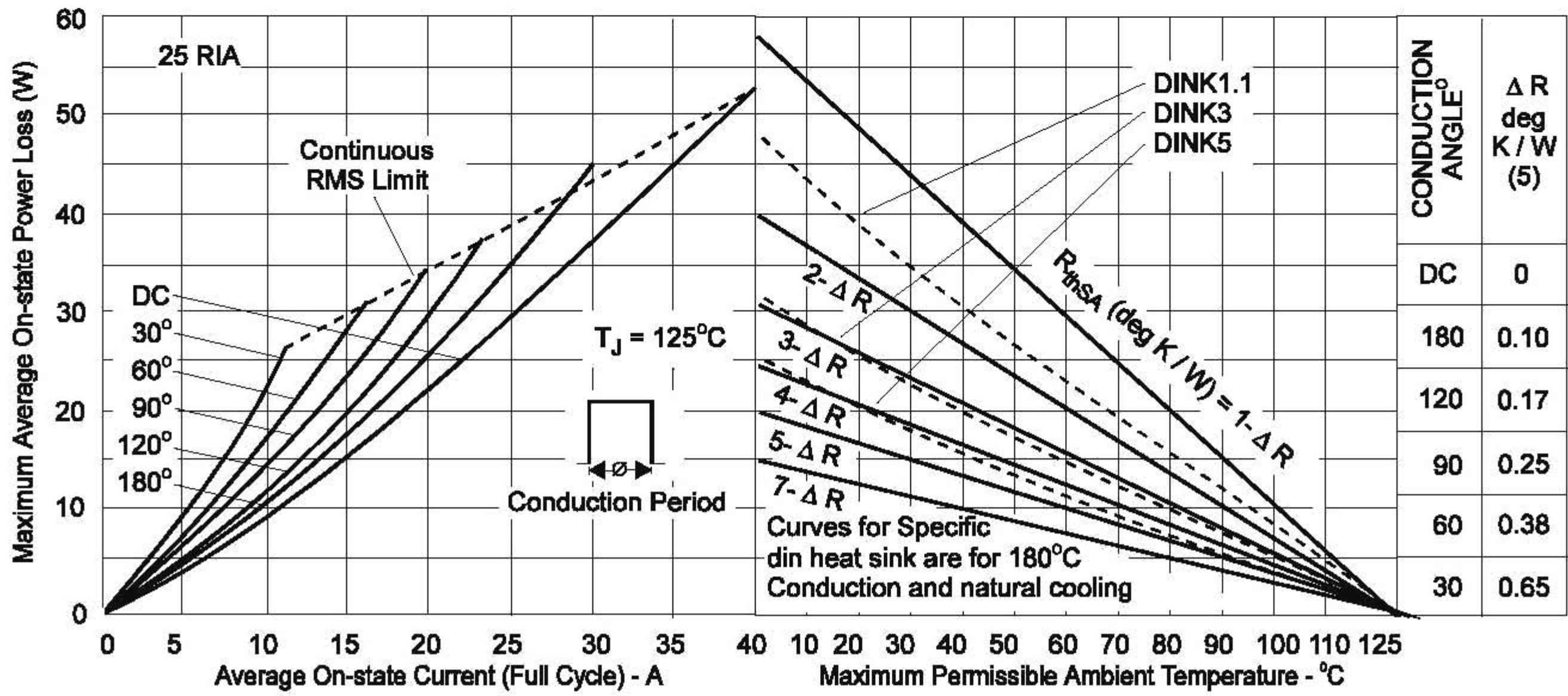
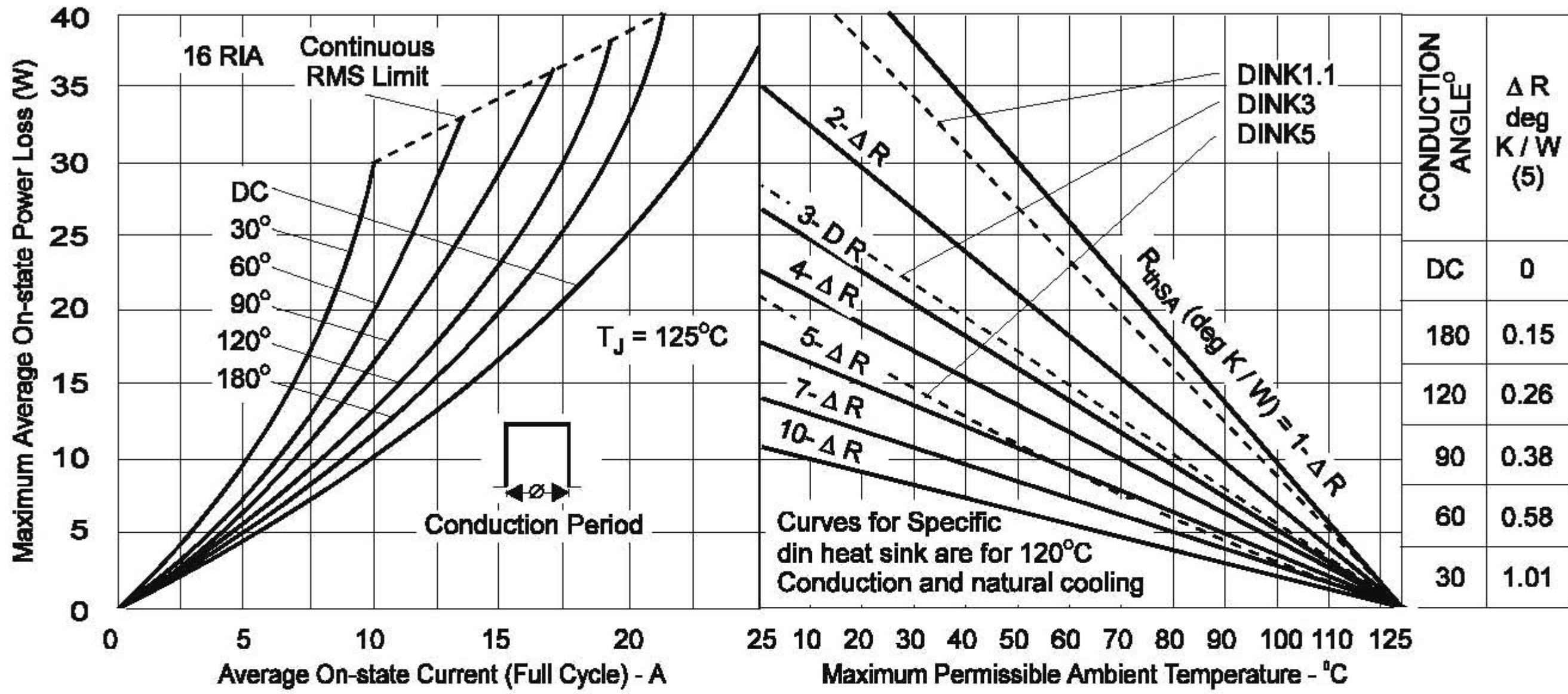
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16RIA, 25RIA SERIES



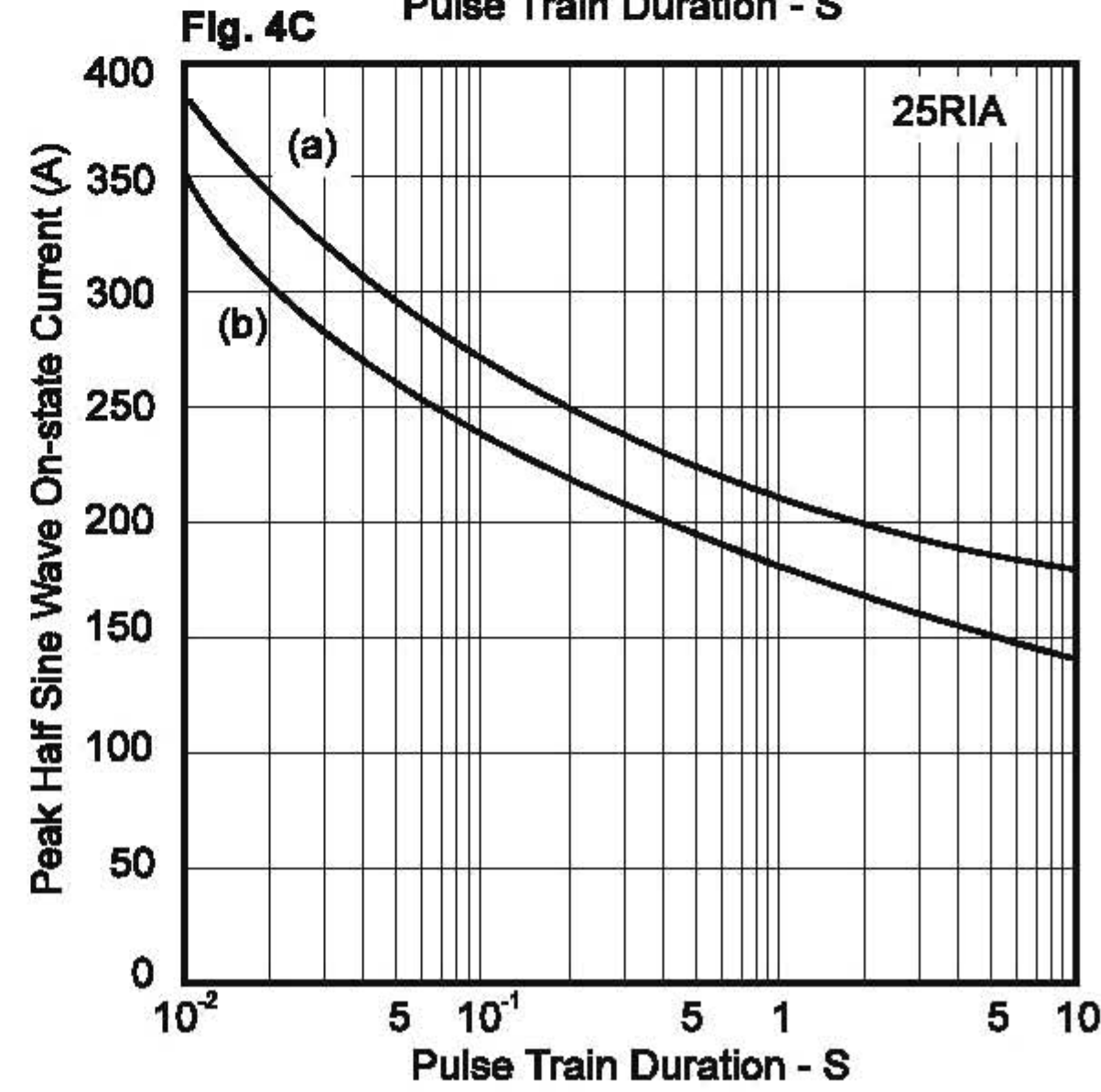
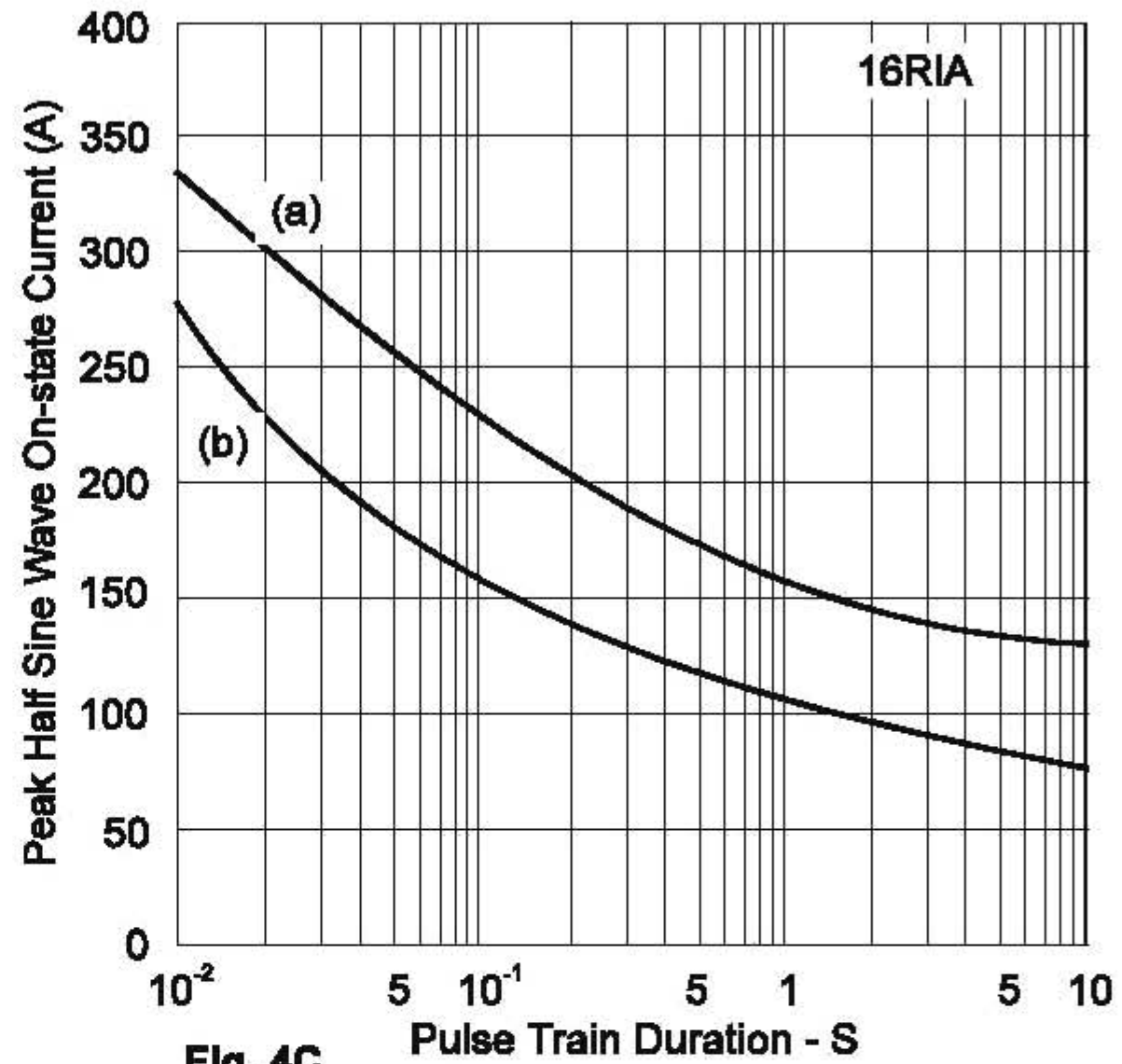
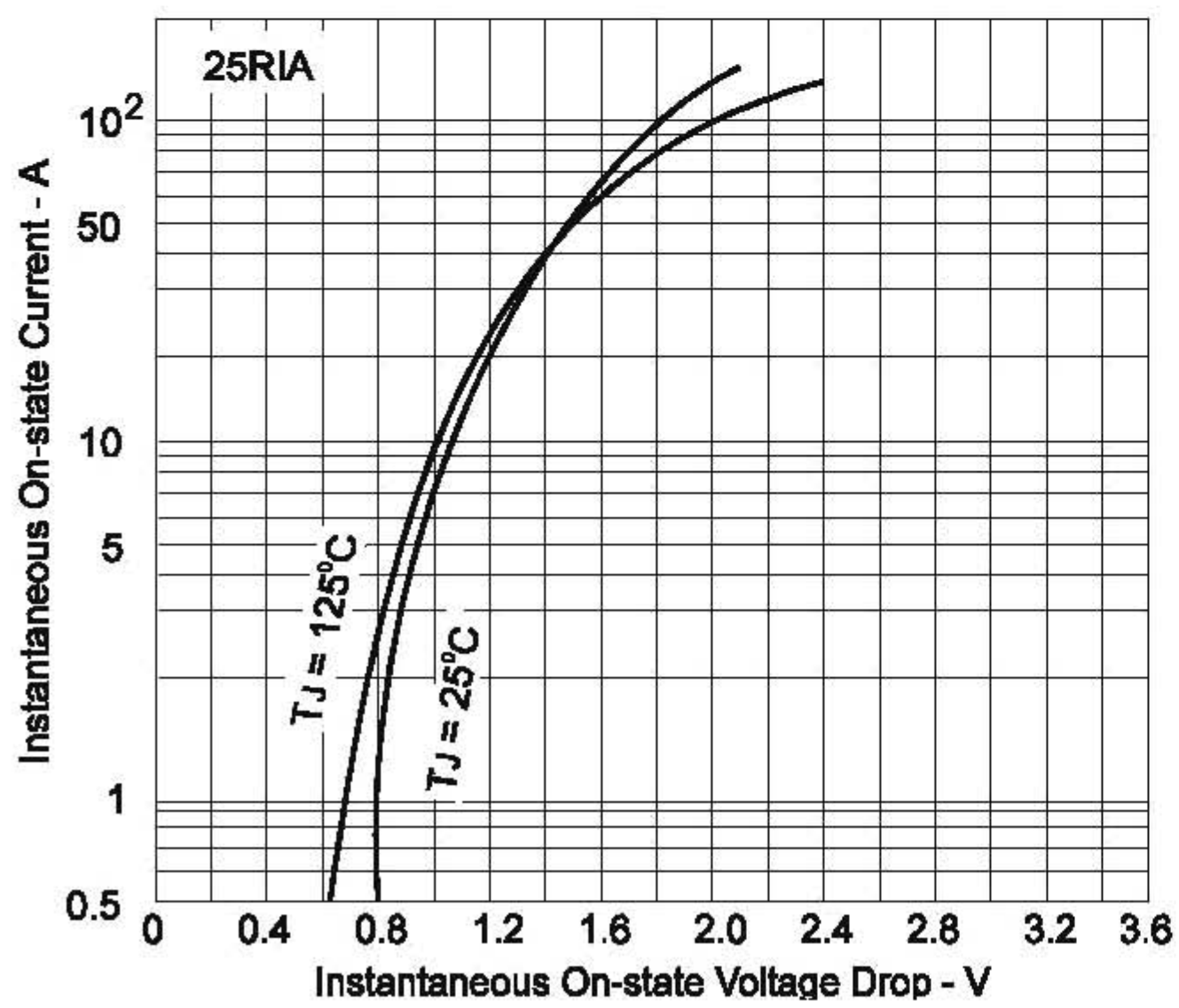
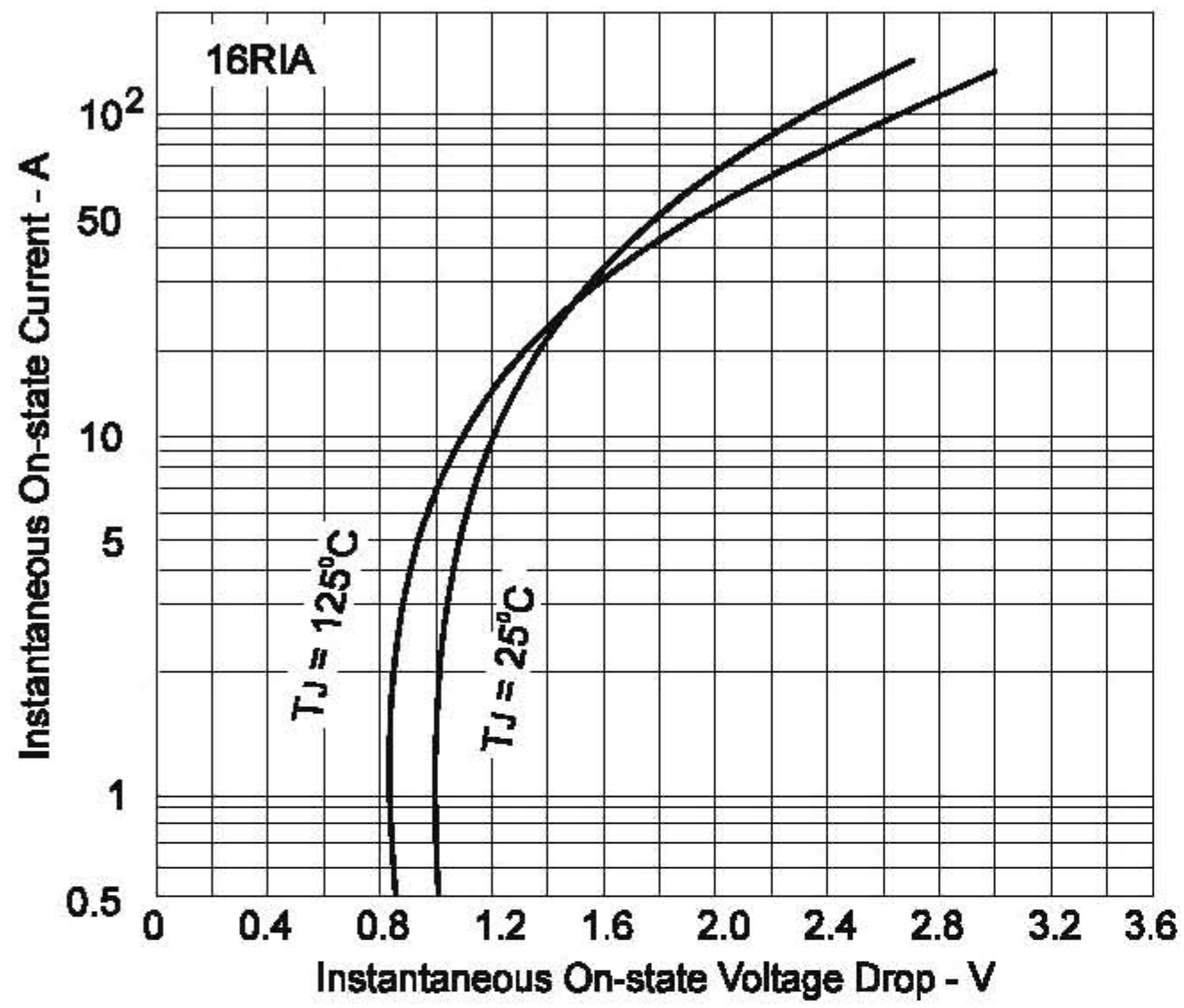
SILICON CONTROLLED RECTIFIERS

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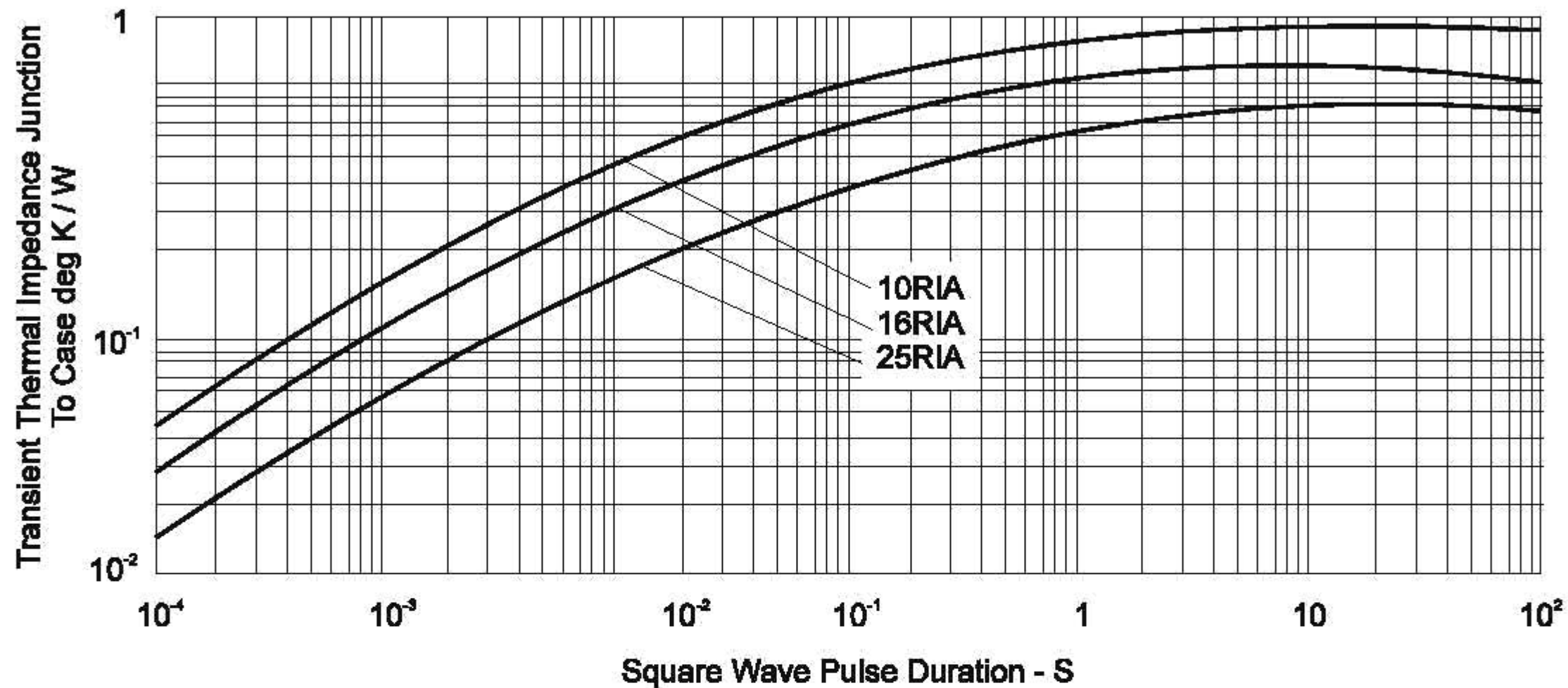


Fig. 5 - Maximum Transient Thermal Impedance Versus Square Wave Pulse Duration

NOTES

- 1 - GATE OPEN CURRENT.
- 2 - WITH ZERO OR NEGATIVE GATE BIAS VOLTAGE.
- 3 - FOR VOLTAGE PULSE LESS THAN 10m Sec.
- 4 - VOLTAGE REAPPLIED SINUSOIDALLY, 10ms HALF PERIOD
- 5 - 6V ANODE SUPPLY, RESISTIVE LOAD, GATE OPEN.
- 6 - 6V ANODE SUPPLY, RESISTIVE LOAD
- 7 - GATE CURRENT = 200mA, RISE TIME 0.5μs PULSE DURATION AT LEAST 6μs $V_D = 0.5 V_{DRM}$ RESISTIVE CIRCUIT $I_{TM} = 0.1 \times I_T (AV)$
- 8 - $I_{TM} = I_T (AV)$ FOR AT LEAST 200 μs, $dv/dt = 10A/\mu s$
- 9 - $I_{TM} = I_T (AV)$, $dv/dt = 10\mu s$, ON-STATE CURRENT PULSE AT LEAST 200μs DURATION. RESERVE VOLTAGE DURING TURN OFF 100V, REAPPLIED $dv/dt = 20V/\mu s$ EXPONENTIAL TO 0.67 V_{DRM} .
- 10 - FROM 0.67 V_{DRM} , $T_J = 125^\circ C$. PEAK GATE CURRENT = 0.5 RISE TIME 1μs, PULSE DURATION AT LEAST 6μs. $I_{TM} = A \times I_T (AV)$
- 11 - WITH V_{DRM} APPLIED, $I_{TM} = 0.1 \times I_T (AV)$
- 12 - TO DETERMINE REQUIRED HEAT SINK THERMAL RESISTANCE (R_{thSA}) IN DEG C / W USE VALUE OF ΔR APPROPRIATE TO CONDUCTION ANGLE STATED IN TABLE AND SUBSTITUTE IN FORMULA $R_{thSA} = X - \Delta R$.
e.g. FOR 10RIA AT 180°C CONDUCTION ANGLE, AND 60°C AMBIENT TEMPERATURE $R_{thSA} = 3 - 0.42 = 2.58$ DEG C / W (FIG. 1)

