



CKKT 715-1000 Thyristor/Thyristor Series

715 – 1000 Amps, Up to 1800 Volts
Thyristor Power Module

Features:

- Electrically isolated base plate
- 3500V_{RMS} Isolating Voltage
- Industrial Standard Package
- Simplified mechanical designs, rapid assembly
- High surge capacity
- Large creep distances
- Beryllium oxide substrate

ELECTRICAL SPECIFICATIONS

MAJOR RATINGS & CHARACTERISTICS

Parameter	CKKT 715	CKKT 800	CKKT 1000	Units
$I_{T(AV)}/I_{F(AV)}$	715	800	1000	A
@ T_C	85	78	77	°C
$I_{T(RMS)}$	1123	1256	1570	A
I_{TSM}/I_{FSM}	(50Hz) 28	28	32	kA
I^2t	(50Hz) 3920	3920	5120	kA ² s
$V_{DRM} - V_{RRM}$	1000 to 1800	1000 to 1800	1000 to 1200	V
T_J	-40 to 125	-40 to 125	-40 to 125	°C

PART NUMBER	VOLTAGE CODE	V_{RRM} Max. Repetitive Peak Reverse Voltage Blocking Voltage V	V_{RSM} Max. Non-repetitive Peak Reverse Voltage V	I_{RD} Max @ 125°C mA
CKKT 715 CKKT 800	10	1000	1100	150
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	
	18	1800	1900	



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PART NUMBER	VOLTAGE CODE	V_{RRM} Max. Repetitive Peak Reverse Voltage Blocking Voltage V	V_{RSM} Max. Non-repetitive Peak Reverse Voltage V	I_{RD} Max @ 140°C mA
CKKT 1000	10	1000	1100	150
	12	1200	1300	150

ON-STATE CONDUCTION

Parameter	Symbol	CKKT 715	CKKT 800	CKKT 1000	Conditions	Units
Max. average on-state current @ 77°C case temperature	$I_{T(AV)}/I_{F(AV)}$	715	800	1000	180° conduction, half sine wave Double side cooled	A
Max. RMS on-state current	$I_{T(RMS)}$	1123	1256	1570		A
Max. peak, one cycle on-state non-repetitive surge current	I_{TSM}/I_{FSM}	28	28	32	t = 10ms 180° half-sine wave; 50Hz (t _p =10ms) single pulse;	kA
Max. I ² t for fusing	I ² t	3920	3920	5120	t = 10ms V _D =V _R =0V, Gate pulse I _G =I _{FGM} ; V _G = 20V; t _{GP} =500μs; di _g /dt = 1A/μs	kA ² s
threshold voltage max	V _{T(TO)}	0.85	0.85	0.90	T _J = T _J MAX	V
On-state slope resistance	r _f	0.20	0.23	0.15	T _J = T _J MAX	mΩ
Max. on-state voltage drop	V _{TM} / V _{FM}	1.45	1.45	1.25	I _F = 2512A (I _F = 3140A for CKK1000) 25°C	V
Maximum holding current	I _H	500 MAX			T _J = 25°C V _D = 12V, Gate Open	mA
Max latching current	I _L	1500 MAX			V _D = 12V, t _p = 500μs, V _G = 20r, I _G = I _{FGM} , T _J = 25°C, di _g /dt = 1A/μs	mA

SWITCHING

Parameter	Symbol	CKKT 715	CKKT 800	CKKT 1000	Conditions	Units
Delay Time	t _D	2.0			T _J = 25°C Gate current = 1A dig/dt = 1A/μs I _G = I _{FGM} , V _d = 0.4% V _{DRM} I _{TM} = I _{T(AV)} V _G = 20V t _{gp} = 500μs, dig/dt = 1A/μs	μs
Turn-off time max	t _Q	250	250	200	dvd/dt = 50 V/μs I _{TM} = I _{T(AV)} Dir/dt = 10A/μs, V _R = 100V, V _D = 0.67 V _{DRM} , T _J = T _J MAX	μs



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BLOCKING

Parameter	Symbol	CKKT 715	CKKT 800	CKKT 1000	Conditions	Units
Maximum critical rate of rise of off-state voltage	dv/dt	500	1000	1000	$T_J = T_J \text{ MAX}$, $V_D = 0.67 V_{DRM}$ Gate open	V/ μ s
Max. peak reverse leakage current	I_{RRM} I_{DRM}	150			$T_J = T_J \text{ MAX}$, rated V_{DRM} / V_{RRM} applied	mA
RMS insulation voltage	V_{INS}	3000	3500	3500	50 Hz, circuit to base, all terminals shorted, 25°C, 1 sec	V

TRIGGERING

Parameter	Symbol	CKKT 715	CKKT 800	CKKT 1000	Conditions	Units
Peak forward gate current	I_{FGM}	8			$T_J = T_J \text{ MAX}$	A
peak reverse gate voltage	V_{RGM}	5			$T_J = T_J \text{ MAX}$	V
RMS insulation voltage	P_G	4			$T_J = T_J \text{ MAX}$ for DC gate current	W
DC gate current required to trigger	I_{GT}	250 MAX			$T_J = 25^\circ\text{C}$ $V_D = 12\text{V}$, $I_D = 3\text{A}$	mA
DC gate voltage required to trigger	V_{GT}	2.5 MAX				V
DC gate voltage not to trigger	V_{GD}	0.25 MIN			$T_J = T_J \text{ MAX}$ $V_D = 0.67 V_{DRM}$	V
DC gate current not to trigger	I_{GD}	10 MIN				mA
Max critical rate of rise of turned-on current	di/dt	100	400	400	$T_J = T_J \text{ MAX}$, $V_D = 0.67 V_{DRM}$, $I_{TM} = 2 I_{T(AV)}$	A/ μ s

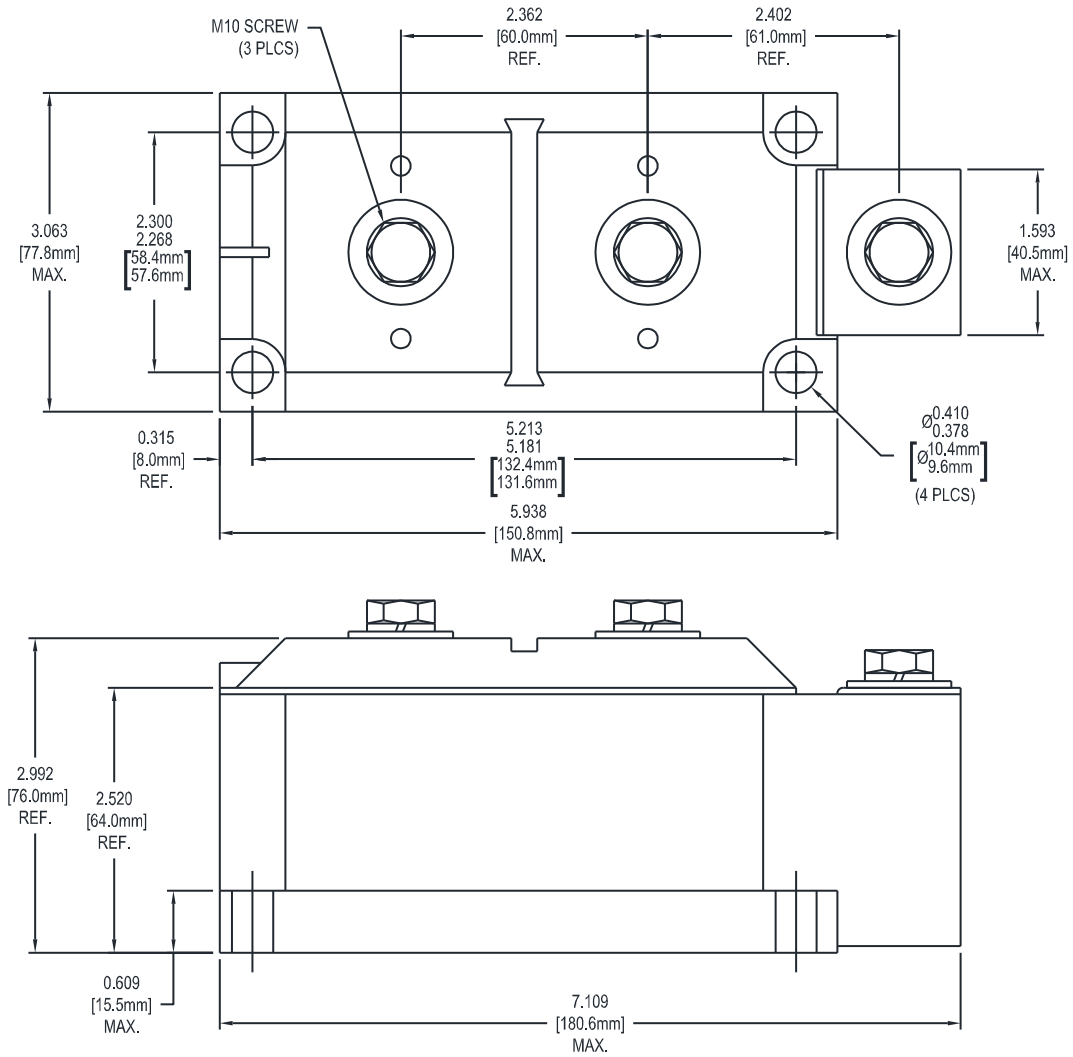
THERMAL AND MECHANICAL SPECIFICATIONS

Parameter	Symbol	CKKT 715	CKKT 800	CKKT 1000	Test Conditions	Units
Max. operating temperature range	T_J	-40 to 125	-40 to 125	-40 to 125		°C/W
Max operating storage temperature	T_{STG}	-40 to 125	-40 to 125	-40 to 125		°C/W
Max. thermal resistance, junction to case	R_{thJC}	0.025/0.050			Per module / per arm	°C/W
Max. thermal resistance, case to heatsink	R_{thCh}	0.008/0.016			Per module / per arm	°C/W
Mounting torque $\pm 15\%$	T	9 (18)			To heat sink (terminal)	Nm
Approximate weight	W	3500				gm



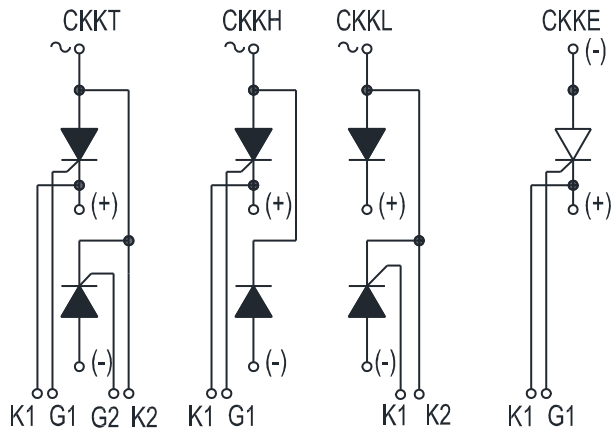
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CASE OUTLINE AND DIMENSIONS

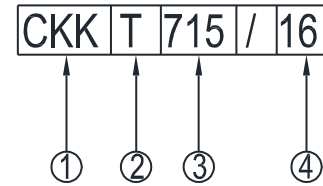




CIRCUIT CONFIGURATION TABLE



ORDERING INFO TABLE



- ① - MODULE TYPE
- ② - CIRCUIT CONFIGURATION
- ③ - CURRENT CODE
- ④ - VOLTAGE CODE