

Bi-Directional Control Thyristor

SKP24F26~33Q

Blocking

Parameter	Symbol	Unit	SKP24F33Q	SKP24F30Q	SKP24F28Q	SKP24F26Q	Conditions
Non-repetitive peak off-state and reverse voltage	V_{DSM}, V_{RSM}	V	3400	3100	2900	2700	$f = 5 \text{ Hz}, t_p = 10\text{ms}$
repetitive peak off-state and reverse voltage	V_{DRM}, V_{RRM}	V	3300	3000	2800	2600	$f = 50 \text{ Hz}, t_p = 10\text{ms}$
Non-repetitive peak off-state and reverse current	I_{DSM}, I_{RSM}	mA	400				$V_{DSM}, V_{RSM}, T_j = 125^\circ \text{ C}$
repetitive peak off-state and reverse current	I_{DRM}, I_{RRM}	mA	400				$V_{DRM}, V_{RRM}, T_j = 125^\circ \text{ C}$
Critical rate of rise of off-state voltage	dv/dt_{crit}	V/ μs	1000				Exp. to $0.67V_{DRM}, T_j = 125^\circ \text{ C}$

On-state

Parameter	Symbol	Unit	Max	Conditions
Average on-state current	I_{TAVM}	A	2437	Half sine wave, $T_c = 70^\circ \text{ C}$
RMS on-state current	I_{TRMS}	A	3818	
Peak non-repetitive current	I_{TSM}	KA	43	$t_p=10\text{ms}, T_j=125^\circ \text{ C},$ Half sine wave, $V_D = V_R = 0\text{V}$ after surge
Limiting load integral	I^2t	kA^2s	9622	
Peak on-state voltage	V_T	V	1.45	$I_T=3000\text{A}, T_j=125^\circ \text{ C}$
Threshold voltage	V_{T0}	V	0.85	$I_T=1500-4500\text{A}, T_j=125^\circ \text{ C}$
Slope resistance	r_T	m Ω	0.2	
Holding current	I_H	mA	150	$T_j=25^\circ \text{ C}$
		mA	130	$T_j=125^\circ \text{ C}$
Latching current	I_L	mA	1000	$T_j=25^\circ \text{ C}$
		mA	900	$T_j=125^\circ \text{ C}$

Switching

Parameter		Symbol	Unit	Max	Conditions
Critical rate of rise of on-state current		di/dt_{crit}	A/ μ s	200	$V_D \leq 0.67 V_{DRM}$, $T_j = 125^\circ\text{C}$, $f = 50\text{Hz}$ $I_{TRM} \leq 2400\text{A}$, $I_{FG} = 2.0\text{A}$, $t_r = 0.5\ \mu\text{s}$
Circuit-commutated turn-off time		t_q	μs	700	$V_D \leq 0.67 V_{DRM}$ $dv_D/dt = -30\text{V}/\mu\text{s}$
Reverse recovery charge	Min	Q_{rr}	μAs	6000	$I_{TRM} = 2000\text{A}$, $T_j = 125^\circ\text{C}$ $V_R = 200\text{V}$, $di_T/dt = -10\text{A}/\mu\text{s}$
	Max		μAs	8000	

Triggering

Parameter	Symbol	Unit	Min	Max	Conditions
Gate-trigger voltage	V_{GT}	V		2.50	$T_j = 25^\circ\text{C}$
Gate-trigger current	I_{GT}	mA		300	$T_j = 25^\circ\text{C}$
Gate non-trigger voltage	V_{GD}	V	0.3		$V_D = 0.4 * V_{DRM}$ $T_j = 125^\circ\text{C}$
Gate non-trigger current	I_{GD}	mA	10		$V_D = 0.4 * V_{DRM}$ $T_j = 125^\circ\text{C}$
Peak forward gate voltage	V_{FGM}	V		12	
Peak forward gate current	I_{FGM}	A		10	
Peak reverse gate voltage	V_{RGM}	V		10	
Average gate power loss	P_G	W		3.0	

Thermal

Parameter	Symbol	Unit	Max	Conditions	
Operating junction temperature range	$T_{j\ max}$	$^\circ\text{C}$	125		
Storage temperature range	$T_{j\ stg}$	$^\circ\text{C}$	Min		-40
			Max		140
Thermal resistance junction to case	R_{thJC}	K/kW	20	Single-side cooled	
		K/kW	10	Double-side cooled	
Thermal resistance case to heatsink	R_{thCH}	K/kW	4	Single-side cooled	
		K/kW	2	Double-side cooled	

Mechanical data

Parameter	Symbol	Unit	Typ	Min	Max
Mounting force	F_M	kN	90	81	108
Housing thickness	H	mm	26.4		26.9
Acceleration	Device unclamped	a			50
	Device clamped				100
Weight	m	kg			2.2
Surface creepage distance	D_s	mm		35	
Air strike distance	D_a	mm		15	

Device Outline Drawing

