

Bidirectional Silicon Controlled Rectifiers

—TSE139

Applications

TSE139 is Bidirectional Silicon Controlled Rectifiers, mainly applications for frequency conversion circuit, electronic switch, washing machine, air-condition and others.

Features

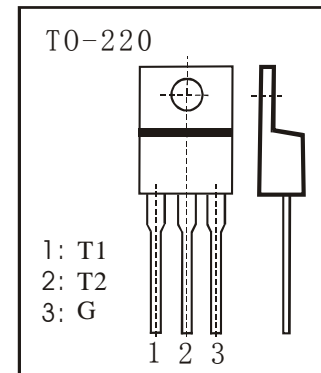
Bidirectional triggering

High reverse voltage

Low forward voltage drop

Package: TO220

Compatible: BTA16、BTB16、BT139



Absolute Rating (Ta= 25°C)

Parameter	Symbol	Ratings	Unit
Peak Repetitive off-state Voltage	V_{DRM}	600	V
Peak Repetitive Reverse Voltage	V_{RRM}	600	V
On-State Average Current	$I_T(AV)$	16	A
Peak Non-repetitive Surge Current	I_{TSM}	140	A
Gate Average Power	T_j	125	°C
Storage Temperature	T_{stg}	-40~125	°C

Thermal Performance

Parameter	Symbol	Conditions	Value	Unit
Thermal resistance junction to mounting base	R_{thj-mb}	Normal state	1.7	°C/W
Thermal resistance junction to ambient	R_{thj-a}		60	°C/W

Electrical Characteristic (Ta= 25°C)

Parameter	Symbol	Test conditions	Criteria			Unit	
			Min	Type	Max		
Peak On-State Voltage	V_{TM}	$I_T=24A$			1.7	V	
Peak Repetitive Off-State Current	I_{DRM}	$V_{DRM}=600V; R_{GK}=1K \Omega$			10	μA	
Holding current	I_H	$V_D=12V; I_{GT}=0.1A$		5	20	mA	
Latching current	I_L	$V_D=12V; I_{GT}=0.1A$		16	60	mA	
Critical Rate of Rise of On-State Current	dI_T/dt	$I_T=20A, I_G=0.2A, dI_G/dt=0.2A/\mu S$			50	A/ μs	
Critical Rate of Rise of Off-State Voltage	dV_D/dt	$V_{DM}=67\% V_{DRM}, R_{GK}=1K \Omega, T_j=125^\circ C$	50	250		V/ μs	
Peak Gate Current	I_{GM}				2	A	
Peak Gate Voltage	V_{GM}				5	V	
Gate Trigger Current※	$T_{2+} G_+$	I_{GT}	$V_D=12V$ $I_T=0.1A$		35	mA	
	$T_{2+} G_-$				35		
	$T_{2-} G_-$				35		
	$T_{2-} G_+$				70		
Gate Trigger Voltage	$T_{2+} G_+$	V_{GT}	$V_D=12V$ $R_L=100 \Omega$		0.75	1.5	V
	$T_{2+} G_-$				0.75	1.5	
	$T_{2-} G_-$				0.75	1.5	
	$T_{2-} G_+$				0.75	1.5	
Leakage Current	I_D	$V_D=V_{DRM}$		0.1	0.5	mA	

※: The parameter is related to the operating ambient temperature