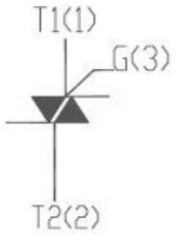
VOLTAGE 600/800 V

CURRENT 16.0 A

Features

- High current triac
- Low thermal resistance with clip bonding
- High commutation (4 quadrant) or very high commutation (3 quadrant) capability

GK xxx
BT139 600/800x



LOGO GK xxx CODE

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS (Tj = 25°C, unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
VDRM VRRM	Repetitive Peak Off-State Voltage	BT139-600	600	V
		BT139-800	800	V
IT(RMS)	R.M.S On-State Current	Tc=110°C	16	A
ITSM	Surge On-State Current	tp=16.7ms/tp=10ms	160/168	A
I²t	I²t for fusing	Tp=10ms	144	A²s
PG(AV)	Average Gate Power Dissipation	Tj=125°C	1	W
IGM	Peak Gate Current	Tj=125°C	4	A
Tj	Operating Junction Temperature		~40~125	°C
TSTG	Storage Temperature		~40~150	°C

Electrical Characteristics (Tj=25°C unless otherwise specifed)

Symbol	Parameter		Test Conditions	Value				Unit
				D	E	F	G	
IDRM	Repetitive Peak Off-State Current		Tj=25°C	≤5				uA
			Tj=125°C	≤1				mA
IRRM	Repetitive Peak Reverse Current		Tj=25°C	≤5				uA
			Tj=125°C	≤1				mA
VTM	Forward "on" voltage		IT=20A tp=380us	1.55				V
VGT	Gate trigger voltage		VD=12V ,RL=30Ω	≤1.5				V
di/dt	Critical-rate of rise of commutation current.	I,II,III	IG=2XIGT,tr≤ 100ns,F=100Hz	≥50				A /us
		IV		≥10				A /us
IGT	Gate trigger current	I,II,III	VD=12V RL=30Ω	≤5	≤10	≤25	≤50	mA
		IV		≤10	≤25	≤70	≤100	mA
IH	Holding current		IT=0.2A	≤10	≤25	≤30	≤60	mA
VDG	Gate non-trigger voltage	ALL	VD=VDRM ,RL=30Ω ,TJ=125°C	≥0.2				V
dv/dt	Critical-rate of rise of commutation voltage		TJ=125°C VD=2/3VDRM Gate open circuit	≥5	≥10	≥25	≥200	V/us
Rth(j-c)	Thermal resistance		Junction to case	1.1				°C/W
Rth(j-a)	Thermal resistance		Junction to ambient	50				°C/W

BT139W(3 quadrants)

di/dt	Critical-rate of rise of commutation current.	I,II,III	IG=2XIGT,tr≤ 100ns,F=100Hz	≥50				A /us
IGT	Gate trigger current	I,II,III	VD=12V RL=30Ω	D	E	F	G	mA
				≤5	≤10	≤25	≤50	

RATING AND CHARACTERISTIC CURVES

FIG.1: Maximum power dissipation versus RMS on-state current

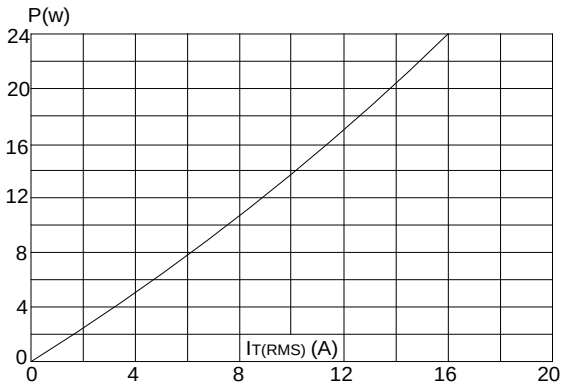


FIG.2: RMS on-state current versus case temperature

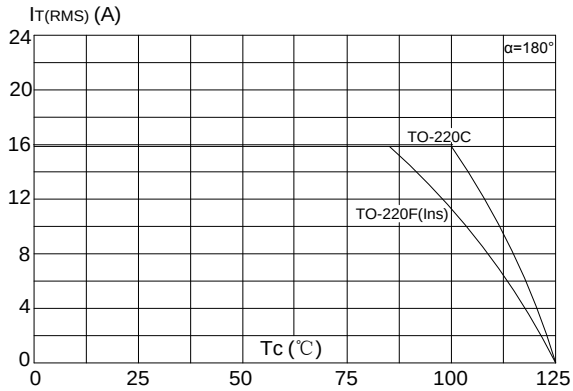


FIG.3: Surge peak on-state current versus number of cycles

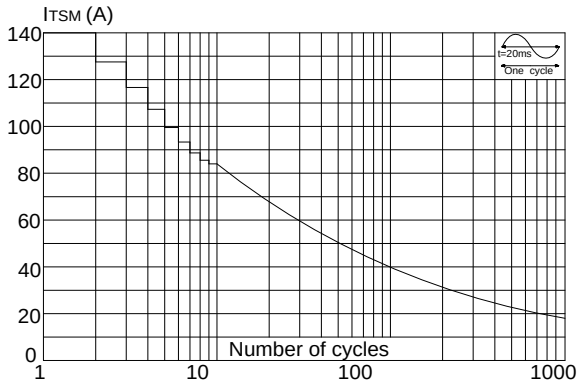


FIG.4: On-state characteristics (maximum values)

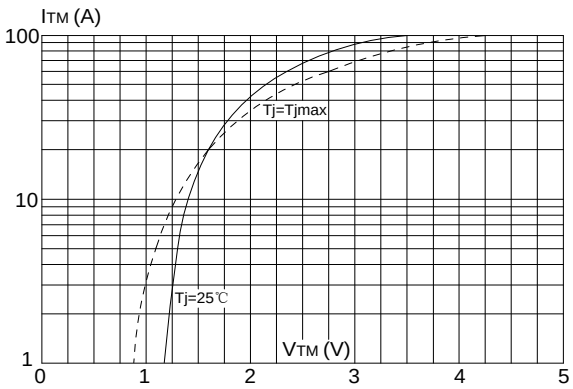


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I^2t (dI/dt < 100A/μs)

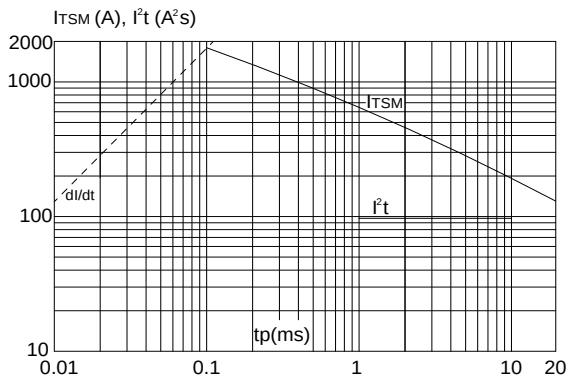
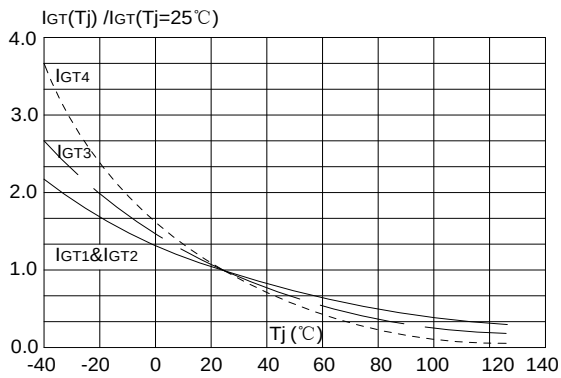


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



RATING AND CHARACTERISTIC CURVES

FIG.7: Relative variations of holding current versus junction temperature

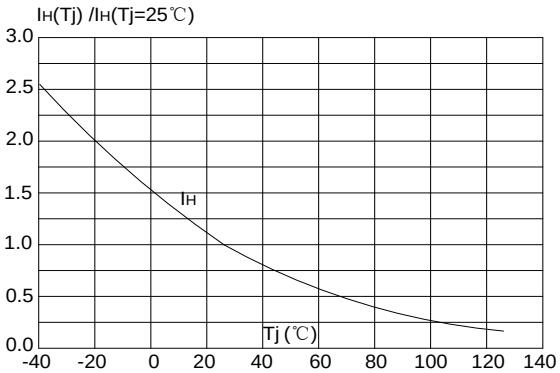
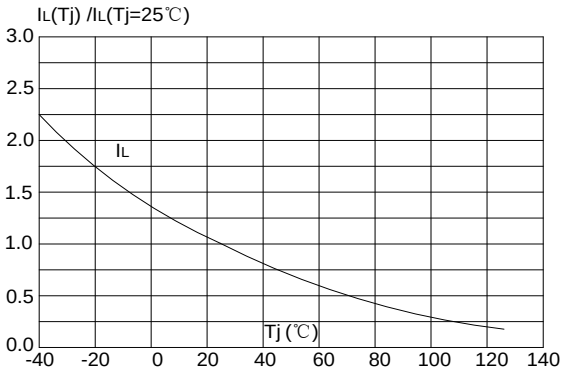
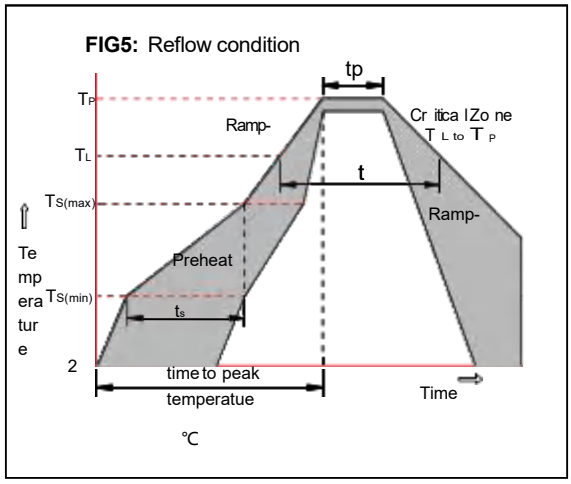


FIG.8: Relative variations of latching current versus junction temperature



Soldering parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



Package Dimensions & Suggested Pad Layout

TO-220AB

