V_{RRM}	650	V
I_F	40	A
Q_c	160	nC

Features

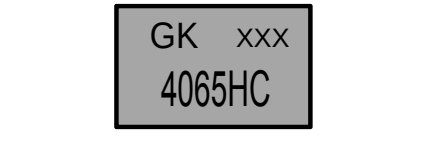
- Zero Forward Recovery Voltage
- Zero Reverse Recovery Current
- Excellent Surge Current Capability
- Temperature Independent Switching
- Positive Temperature Coefficient on V_F
- High Frequency Operation

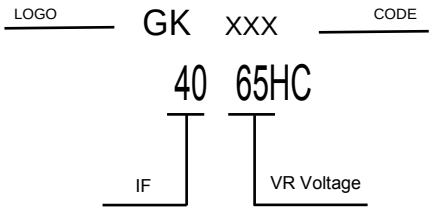
Benefits

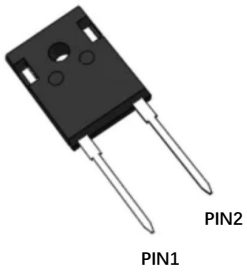
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- High Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Parallel Devices Without Thermal Runaway
- Power Factor Correction
- DC-AC Inverters
- DC-DC Inverters







TO247-2L

Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Maximum ratings (T_j=25℃ unless otherwise specified)

Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		650	V
Forward Current	I_F	T_C=25℃ T_C=150℃	108 40	A
Non-Repetitive Forward Surge Current	I_{FSM}	T_C=25℃, t_p=10ms, Half Sine Wave	250	A
Power Dissipation	P_{tot}	T_C=25℃, T_j=175℃	186	W
Avalanche Energy, Single Pulse	*EAS*	*Tj=25℃, VDD=100V, L=10mH*	245	mJ
Avalanche Current, Single pulse	*IAS*		7	A
Operating and Storage Temperature	T_j, T_{stg}		-55 to +175	℃

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

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
DC Blocking Voltage	V_{DC}	T_j=25℃, I_D=500μA	650			V
Forward Voltage	V_F	I_F=40A, T_j=25℃		1.32	1.61	V
		I_F=40A, T_j=175℃		1.51		V
Reverse Current	I_R	V_R=650V, T_j=25℃			50	μA
		V_R=650V, T_j=175℃			200	μA
Total Capacitive Charge	Q_C	V_R=650V, T_j=25℃		160		nC
Total Capacitance	C	T_j=25℃ V_R=1V, f=1MHz V_R=200V, f=1MHz V_R=400V, f=1MHz		1951 230 167		pF

Thermal Characteristics

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Thermal Resistance from Junction to Case	$R_{th(j-c)}$	-	0.6	0.8	℃/W

RATING AND CHARACTERISTIC CURVES

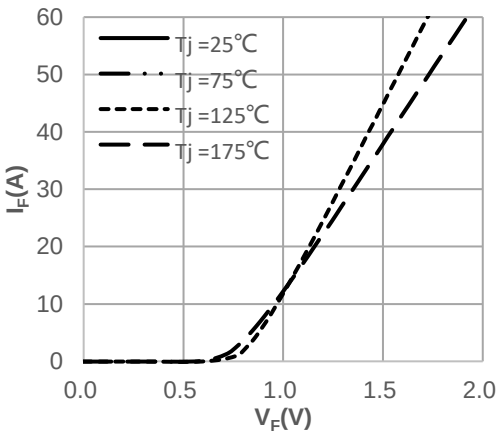


Fig1. Forward Characteristics

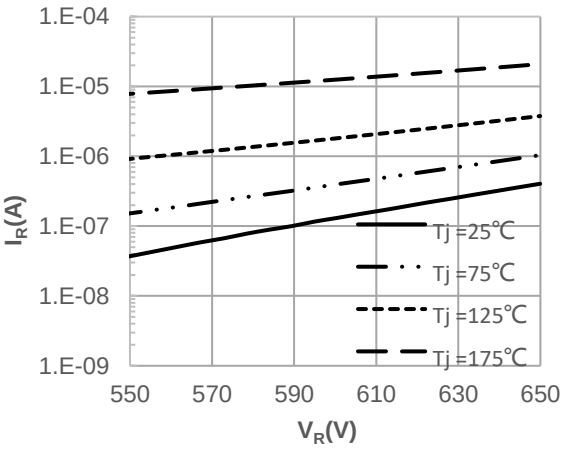


Fig2. Reverse Characteristics

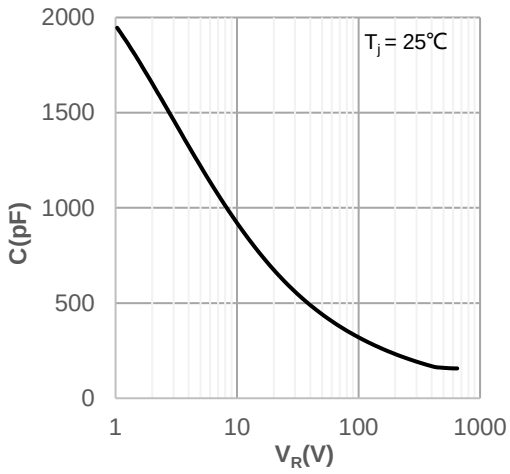


Fig3. Capacitance vs. Reverse Voltage

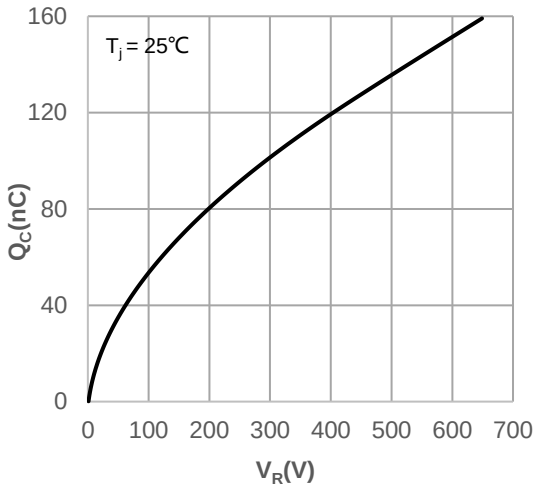
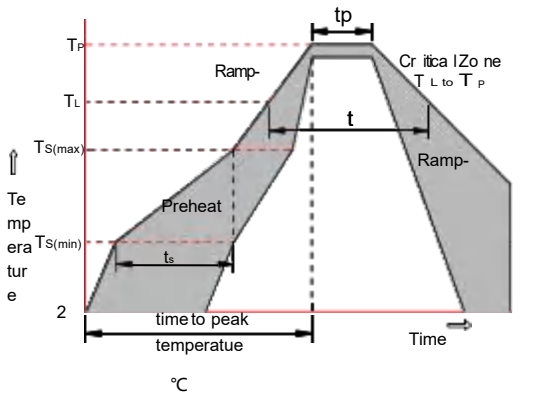


Fig4. Recovery Charge vs. Reverse Voltage

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℃

FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

TO-247-2L

