

SCT 334...F

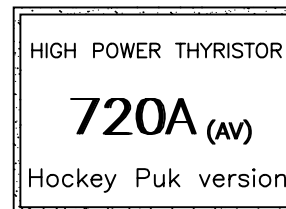
PLASTIC CASE

Features

- ⊕ Center amplifying gate
- ⊕ Guaranteed high dV/dt
- ⊕ Guaranteed high dI/dt
- ⊕ Low thermal impedance
- ⊕ High speed performance

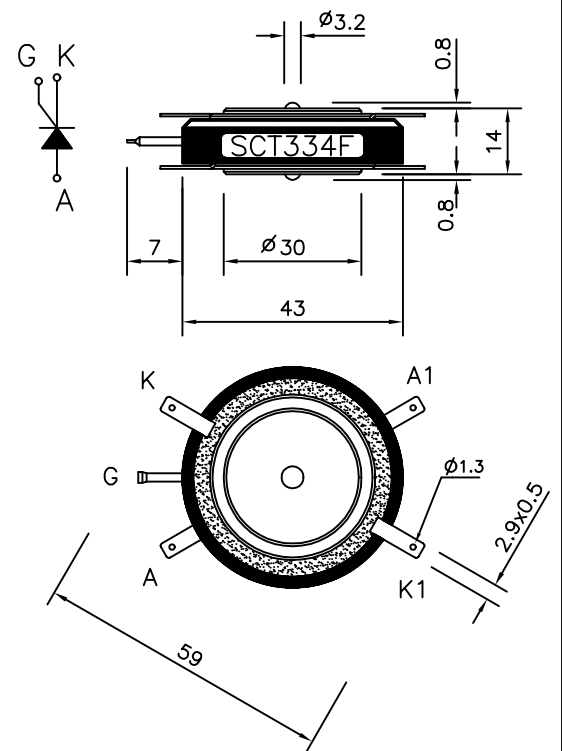
Typical Applications

- ⊕ Inverters
- ⊕ Choppers
- ⊕ Inducting heating
- ⊕ All types of force-commutated converters



Ratings and Characteristics

Parameters	SCT334F	Units
$I_{T(AV)}$	720	A
@ T_{hs}	55	°C
$I_{T(RMS)}$	1435	A
@ T_{hs}	25	°C
I_{TSM}	@ 50Hz 11.000	A
	@ 60Hz 11.500	A
I^2t	@ 50Hz 605	KA ² s
	@ 60Hz 553	KA ² s
V_{DRM}/V_{RRM}	200 to 600	V
t_q	typical 10 to 30	μs
T_j	-40 to 125	°C



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Voltage Code	V_{DRM}/V_{DRM} , max. repetitive peak and off-state voltage	Current Code	I_{GT} Trigger current	Internal SCOMES Reference
02	200 V	04	40 mA	
04	400 V	06	60 mA	
06	600 V	08	80 mA	
--	-----	10	100 mA	
--	-----	12	120 mA	
--	-----	14	140 mA	
--	-----	16	160 mA	
--	-----	18	180 mA	
--	-----	20	200 mA	
--	-----	22	220 mA	

ELECTRICAL SPECIFICATIONS

⊕ On-state Conduction

Parameter	SCT334F	Units	Conditions
$I_{T(AV)}$ Max. average on-state current ⊙ Heatsink temperature	720(350)	A	180° conduction, half sine wave
	55(75)	°C	double side (single side) cooled
$I_{T(RMS)}$ Max. RMS on-state current	1.435		DC@25°C heatsink temperature (double side cooled)
I_{TSM} Max. peak, one-cycle non-repetitive surge current	11.000	A	t=10ms No voltage
	11.500		t=8.3ms reapplied
	9.250		t=10ms 100% V_{RRM}
	9.700		t=8.3ms reapplied
$I^2 t$ Maximum $I^2 t$ for fusing	605	KA ² s	t=10ms No voltage
	553		t=8.3ms reapplied
	428		t=10ms 100% V_{RRM}
	391		t=8.3ms reapplied
$I^2 \sqrt{t}$ Maximum $I^2 \sqrt{t}$ for fusing	6.050	KA ² √s	t=0.1 to 10ms, no voltage reapplied
$V_{T(TO)1}$ Low level value of threshold voltage	0.91	V	$(16.7\% \times I_{T(AV)} < I < I_{T(AV)})$, $T_J = T_J \text{ max.}$
$V_{T(TO)2}$ High level value of threshold voltage	0.93		$(I < I_{T(AV)} < I)$, $T_J = T_J \text{ max.}$
r_{t1} Low level value of on-state slope resistance	0.58	mΩ	$(16.7\% \times I_{T(AV)} < I < I_{T(AV)})$, $T_J = T_J \text{ max.}$
r_{t2} High level value of on-state slope resistance	0.58		$(I < I_{T(AV)} < I)$, $T_J = T_J \text{ max.}$
V_{TM} Max. on-state voltage	1.96	V	$T_J = 25^\circ\text{C}$, $I_T > 30\text{A}$
I_H Maximum holding current	600	mA	$T_J = 25^\circ\text{C}$, $V_A = 12\text{V}$, $R_a = 6\text{ohm}$, $I_G = 1\text{A}$
I_L Latching current	1000		

⊕ Switching

Parameter	SCT334F	Units	Conditions
di/dt Max. non repetitive rate of rise of turned-on current	1000	A/μs	$T_J = T_J \text{ max.}$, $V_{DRM} = \text{rated } V_{DRM}$ $I_{TM} = 2 \times di/dt$
t_d Typical delay time	1.1	μs	$T_J = 25^\circ\text{C}$, $V_{DM} = \text{rated } V_{DRM}$, $I = 50\text{A dc}$, $t_p = 1\mu\text{s}$ resistive load, Gate pulse: 10V, 5ohm source
t_q Typical turn-off time	MIN. 10 MAX. 30		$T_J = T_J \text{ max.}$, $I_{TM} = 550\text{A}$, commutating $di/dt = 40\text{A}/\mu\text{s}$ $V_R = 50\text{V}$, $t_p = 500\mu\text{s}$, dv/dt : see table in device code

⊕ Blocking

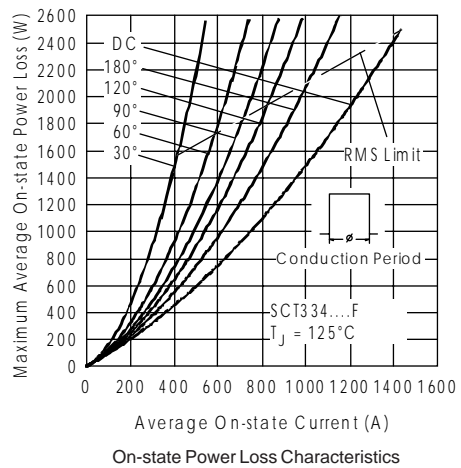
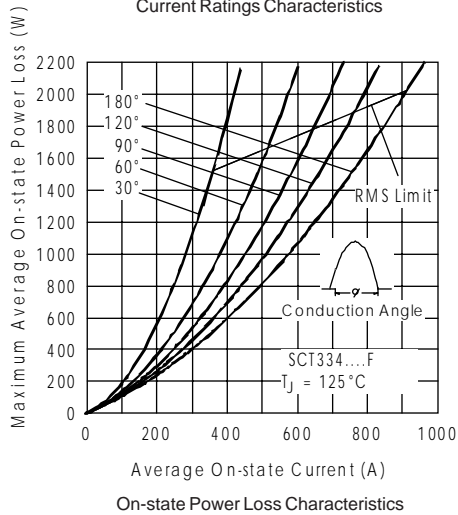
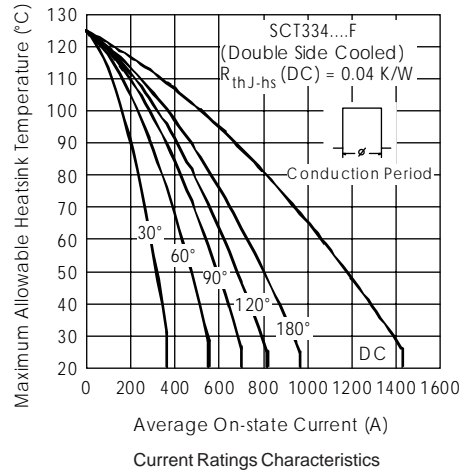
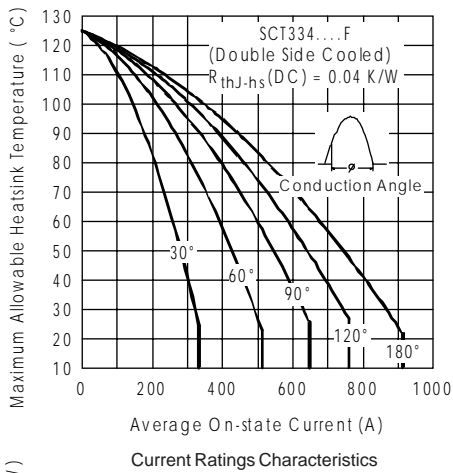
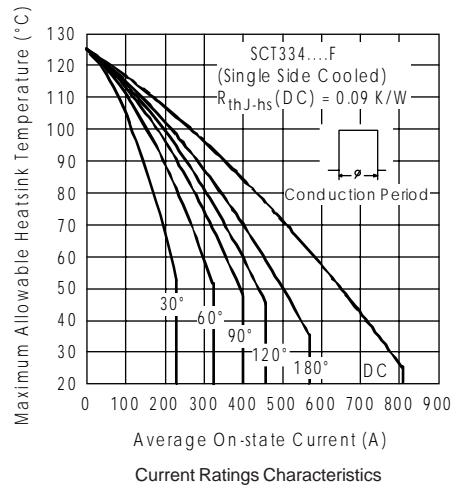
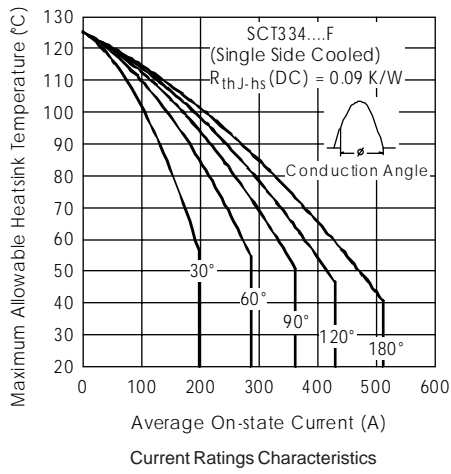
Parameter	SCT334F	Units	Conditions
dv/dt Maximum critical rate of rise of off-state voltage	500	V/ μ s	$T_J = 125^\circ\text{C}$ linear to 80% rated V_{DRM}
I_{RRM} / I_{DRM} Max. peak reverse and off-state leakage current	50	mA	$T_J = 125^\circ\text{C}$, rated V_{DRM}/V_{RRM} applied

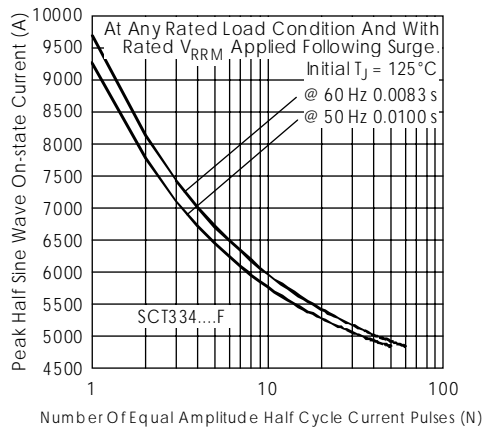
⊕ Triggering

Parameter	SCT334F	Units	Conditions
P_{GM} Maximum peak gate power	60	W	$T_J = 125^\circ\text{C}$, $f = 50\text{Hz}$, $d\% = 50$
$P_{G(AV)}$ Maximum average gate power	10		
I_{GM} Max. peak positive gate current	10	A	$T_J = 150^\circ\text{C}$, $t_p \leq 5\text{ms}$
$+V_{GM}$ Maximum peak positive gate voltage	20	V	$T_J = 125^\circ\text{C}$, $t_p \leq 5\text{ms}$
$-V_{GM}$ Maximum peak negative gate voltage	5		
I_{GT} DC gate current required to trigger	200	mA	$T_J = 25^\circ\text{C}$, $V_A = 12\text{V}$, $R_a = 6\text{ohm}$
V_{GT} DC gate current required to trigger	3	V	
I_{GD} DC gate current not to trigger	20	mA	$T_J = 125^\circ\text{C}$, rated V_{DRM} applied
V_{GD} DC gate voltage not to trigger	0.25	V	

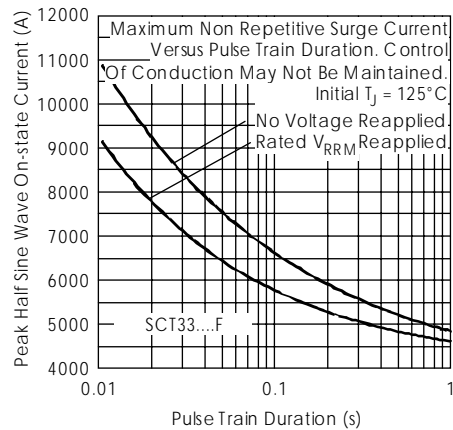
⊕ Thermal and Mechanical Specification

Parameter	SCT334F	Units	Conditions
T_J Max. operating temperature range	-40 to 125	°C	
T_{stg} Max. storage temperature range	-40 to 125		
R_{thJ-hs} Max. thermal resistance, junction to heatsink	0.11 0.06	K/W	DC operation single side cooled DC operation double side cooled
R_{thC-hs} Max. thermal resistance, case to heatsink	0.04 0.03	K/W	DC operation single side cooled DC operation double side cooled
F Mounting force, $\pm 10\%$	9800 (1000)	N (Kg)	
wt Approximate weight	83	g	
Case style	TO-200AB (E-PUK)		See Outline Table

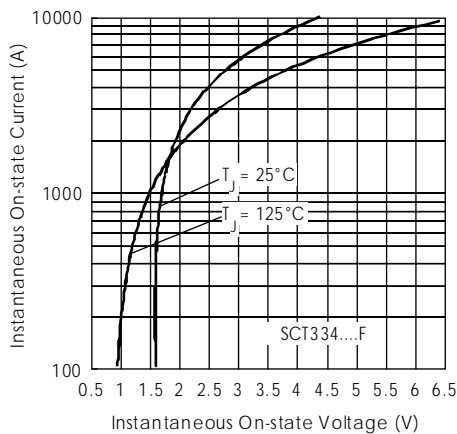




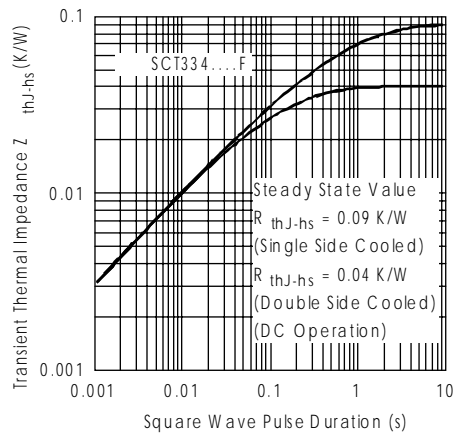
Maximum Non-repetitive Surge Current Single and Double Side Cooled



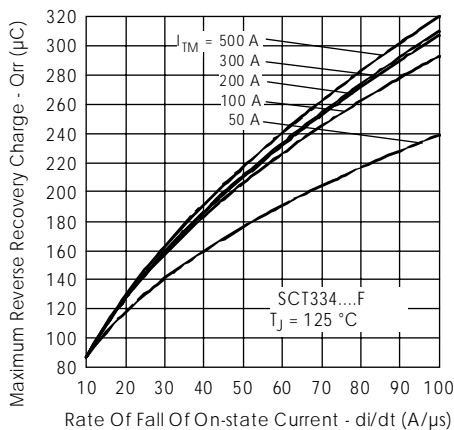
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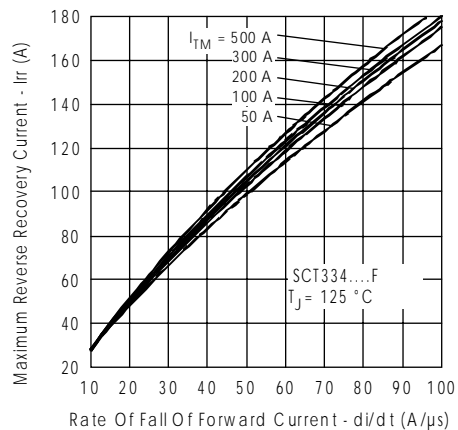
On-state Voltage Drop Characteristics



Thermal Impedance Z_{thJ-hs} Characteristics



Reverse Recovered Charge Characteristics



Reverse Recovery Current Characteristics

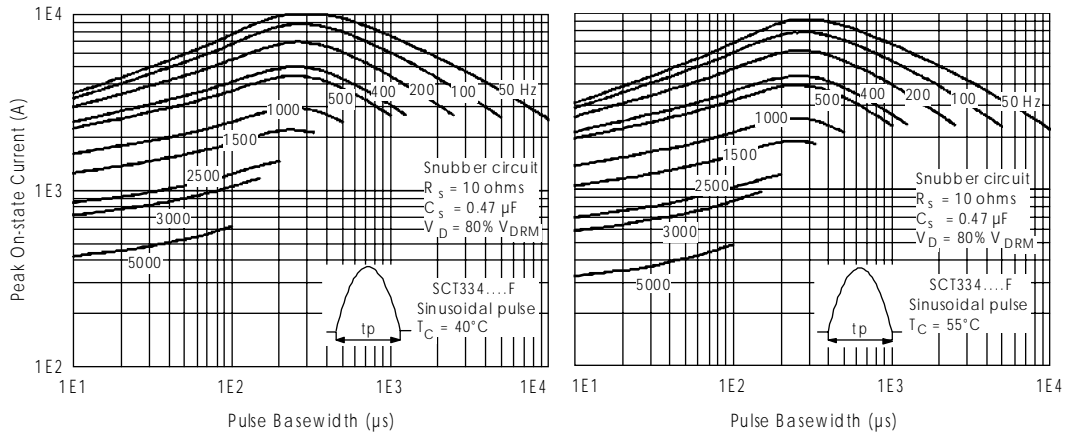
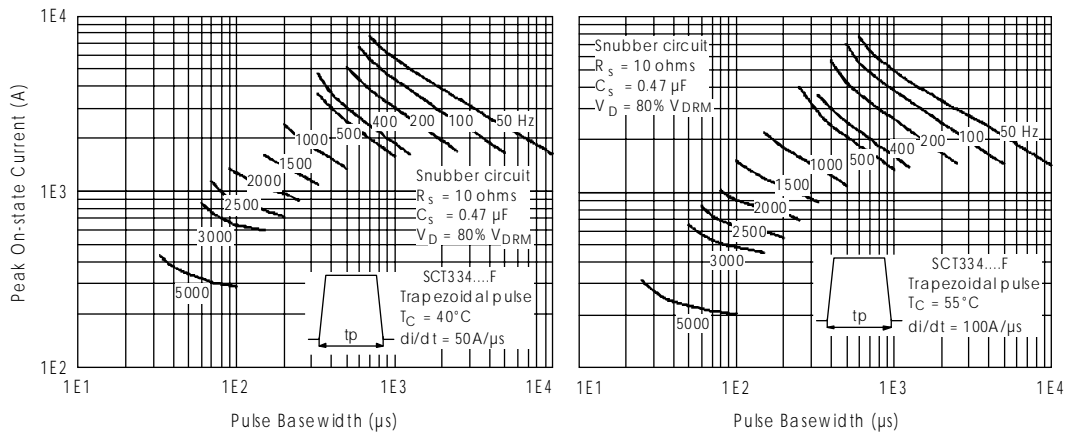
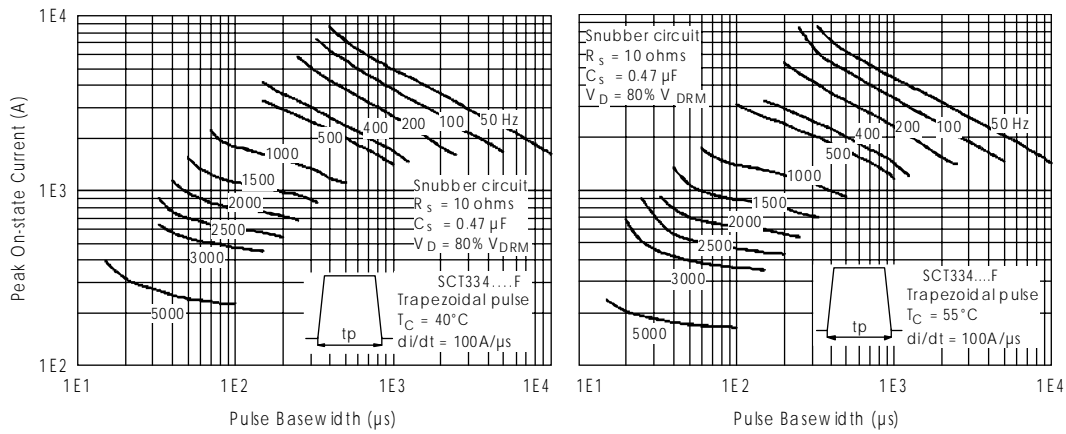


Fig. 13 - Frequency Characteristics



Frequency Characteristics



Frequency Characteristics

