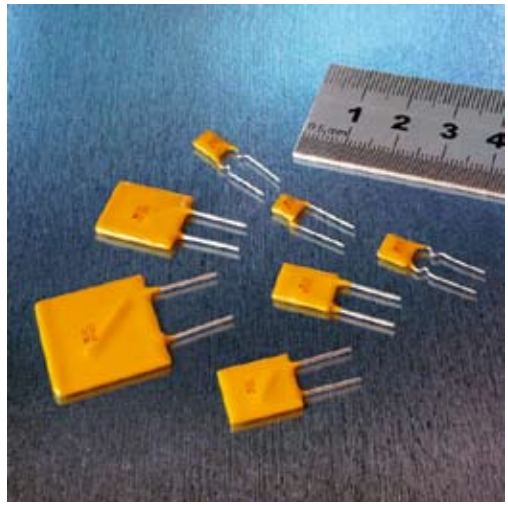
DATASHEET

PolySwitch RKEF Devices

For use in a wide variety of general electronic products, ranging from industrial controls to battery packs, PolySwitch RKEF devices are functionally equivalent to the PolySwitch RXEF overcurrent protection devices. However, they are available in a significantly smaller form factor.

RKEF devices are 30% smaller than the RXEF devices. They provide the same reliable, resettable overcurrent protection and help facilitate shrinking design architectures. All PolySwitch RKEF devices feature a maximum operating voltage rating of 60V and a maximum operating temperature of 85°C. The series includes hold-current ratings of 0.50A to 5.00A and trip-current ratings of 1.00A to 10.0A.

Many of the radial-leaded devices have the same lead spacing as the RXEF devices to facilitate replacement designs and optimize board space or improve thermal conditions.



Benefits:

- Small form factor helps conserve valuable board space
- Same lead spacing as RXEF devices facilitates replacement
- Suitable for a wide range of industrial and consumer electronics applications

Features:

- Resettable overcurrent protection
- EU RoHS and ELV compliant
- Compatible with high-volume electronics assembly

Applications:

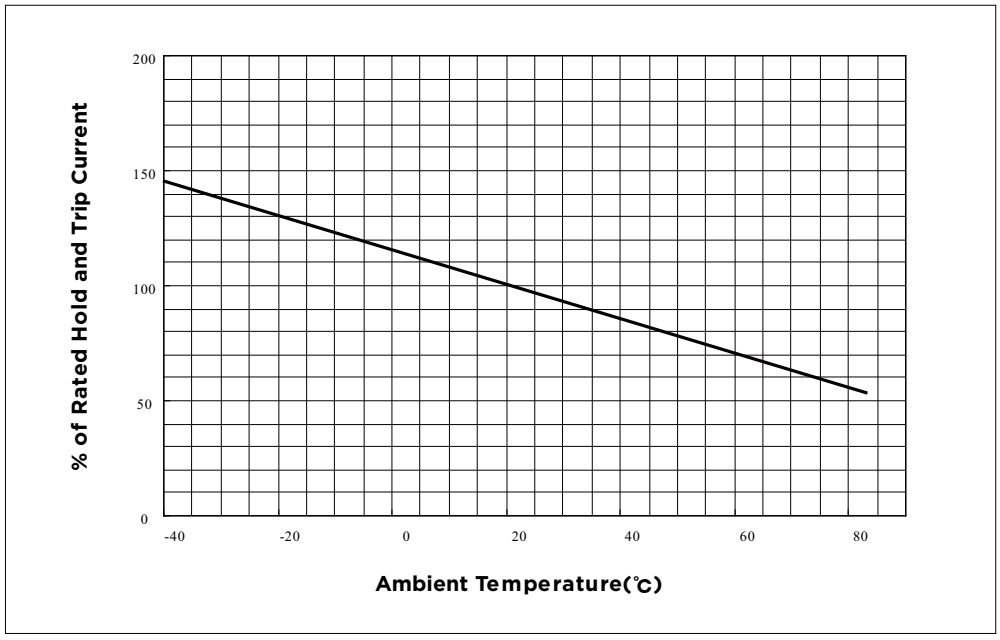
- Satellite video receivers
- Industrial controls
- Transformers
- Computer motherboards
- Modems
- IEEE-1394 ports
- Game machines
- Battery packs
- Telephones and fax machines
- Analog and digital line cards

Thermal Derating [Hold Current (A) at Ambient Temperature (°C)]

		Maximum Ambient Temperature										
	Part Number	**-40°C**	**-20°C**	**0°C**	**20°C**	**25°C**	**40°C**	**50°C**	**60°C**	**70°C**	**85°C**	**125°C**
	RKEF 60V											
NEW	RKEF050	0.73	0.65	0.58	0.50	0.48	0.42	0.38	0.34	0.31	0.26	–
NEW	RKEF065	0.94	0.85	0.75	0.65	0.63	0.54	0.50	0.44	0.40	0.34	–
NEW	RKEF075	1.09	0.98	0.86	0.75	0.73	0.62	0.58	0.51	0.46	0.39	–
NEW	RKEF090	1.30	1.17	1.04	0.90	0.87	0.75	0.69	0.61	0.55	0.47	–
NEW	RKEF110	1.60	1.43	1.27	1.10	1.06	0.92	0.85	0.75	0.67	0.57	–
NEW	RKEF135	1.96	1.76	1.55	1.35	1.31	1.12	1.04	0.92	0.83	0.71	–
NEW	RKEF160	2.32	2.08	1.84	1.60	1.55	1.33	1.23	1.08	0.98	0.83	–
NEW	RKEF185	2.68	2.41	2.13	1.85	1.79	1.54	1.43	1.26	1.13	0.96	–
NEW	RKEF250	3.63	3.25	2.88	2.50	2.43	2.08	1.93	1.70	1.52	1.31	–
NEW	RKEF300	4.35	3.90	3.45	3.00	2.91	2.50	2.30	2.04	1.84	1.55	–
NEW	RKEF375	5.44	4.88	4.31	3.75	3.64	3.11	2.90	2.54	2.29	1.94	–
NEW	RKEF400	5.80	5.20	4.60	4.00	3.88	3.32	3.08	2.73	2.45	2.08	–
NEW	RKEF500	7.25	6.50	5.75	5.00	4.85	4.15	3.85	3.41	3.06	2.59	–

Thermal Derating Curve

RKEF



Electrical Characteristics*

	Part Number	IH (A)	IT (A)	V_{Max} (V)	V_{Max} Interrupt (V_{AC})	I_{Max} (A)	$P_{D\ TYP}$ (W)	Max. Time-to-trip (A)	Max. Time-to-trip (S)	R_{Min} (Ω)	R_{Max} (Ω)	$R_{1\ Max}$ (Ω)	Lead Size [mm² (AWG)]
	RKEF 60V												
NEW	RKEF050	0.50	1.00	60	—	40	1.00	8.00	0.8	0.320	0.529	0.900	0.205mm²(24)
NEW	RKEF065	0.65	1.30	60	—	40	1.25	8.00	1.0	0.250	0.450	0.720	0.205mm²(24)
NEW	RKEF075	0.75	1.50	60	—	40	1.40	8.00	1.5	0.200	0.390	0.640	0.205mm²(24)
NEW	RKEF090	0.90	1.80	60	—	40	1.50	8.00	2.0	0.190	0.320	0.520	0.205mm²(24)
NEW	RKEF110	1.10	2.20	60	—	40	2.20	8.00	3.0	0.170	0.280	0.470	0.520mm²(20)
NEW	RKEF135	1.35	2.70	60	—	40	2.30	8.00	4.5	0.110	0.220	0.370	0.520mm²(20)
NEW	RKEF160	1.60	3.20	60	—	40	2.40	8.20	9.0	0.100	0.200	0.320	0.520mm²(20)
NEW	RKEF185	1.85	3.70	60	—	40	2.60	9.25	12.6	0.060	0.152	0.250	0.520mm²(20)
NEW	RKEF250	2.50	5.00	60	—	40	2.80	12.50	15.6	0.040	0.085	0.140	0.520mm²(20)
NEW	RKEF300	3.00	6.00	60	—	40	3.20	15.00	19.8	0.030	0.050	0.080	0.520mm²(20)
NEW	RKEF375	3.75	7.50	60	—	40	3.40	18.75	22.0	0.017	0.040	0.060	0.520mm²(20)
NEW	RKEF400	4.00	8.00	60	—	40	3.70	20.00	24.0	0.014	0.038	0.060	0.520mm²(20)
NEW	RKEF500	5.00	10.00	60	—	40	5.00	25.00	28.0	0.012	0.030	0.050	0.520mm²(20)

Notes :

IH : Hold current: maximum current device will pass without interruption in 20°C still air.

IT : Trip current: minimum current that will switch the device from low resistance to high resistance in 20°C still air.

V_{max} : Maximum continuous voltage device can withstand without damage at rated current.

V_{max} Interrupt : Under specified conditions this is the highest voltage that can be applied to the device at the maximum current.

I_{max} : Maximum fault current device can withstand without damage at rated voltage.

P_D : Power dissipated from device when in the tripped state in 20°C still air.

R_{min} : Minimum resistance of device as supplied at 20°C unless otherwise specified.

R_{max} : Maximum resistance of device as supplied at 20°C unless otherwise specified.

R_{1max} : Maximum resistance of device when measured one hour post reflow (surface-mount device) or one hour post trip (radial-leaded device) at 20°C unless otherwise specified.

* Electrical characteristics determined at 20°C

Dimension Figures

Figure 1

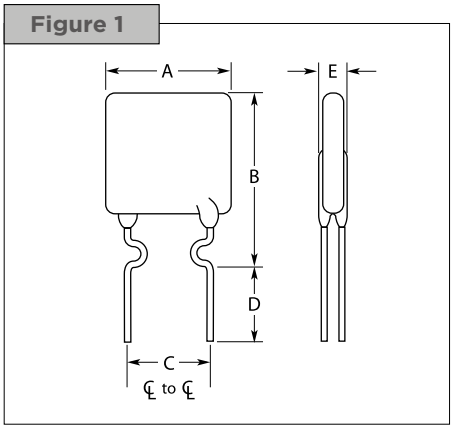


Figure 2

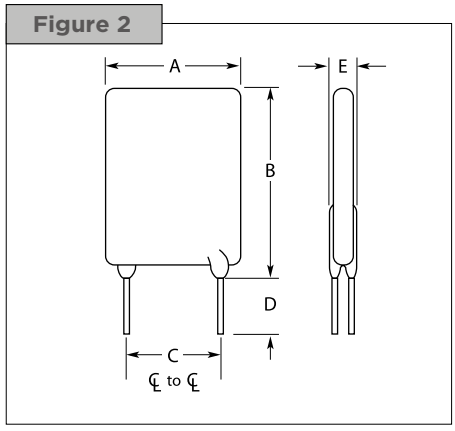
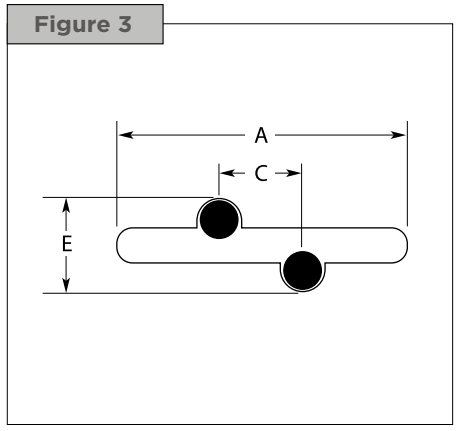


Figure 3



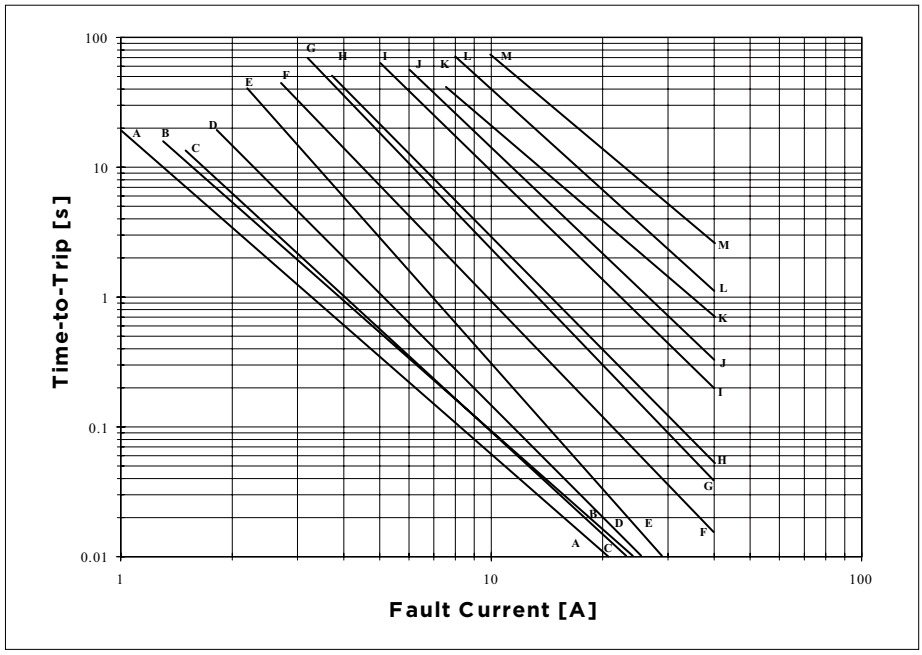
Dimensions in Millimeters (Inches)

	Part Number	Dimension A Min.	A Max.	B Min.	B Max.	C Min.	C Max.	D Min.	D Max.	E Min.	E Max.	Figures
	RKEF 60V											
NEW	RKEF050	—	7.10 (0.28)	—	11.43 (0.45)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.56 (0.14)	1, 3
NEW	RKEF065	—	7.11 (0.28)	—	12.20 (0.48)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.56 (0.14)	1, 3
NEW	RKEF075	—	7.87 (0.31)	—	12.20 (0.48)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.56 (0.14)	1, 3
NEW	RKEF090	—	7.87 (0.31)	—	13.97 (0.55)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.56 (0.14)	1, 3
NEW	RKEF110	—	7.60 (0.30)	—	14.50 (0.57)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	4.10 (0.16)	1, 3
NEW	RKEF135	—	10.20 (0.40)	—	17.00 (0.67)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.81 (0.15)	2, 3
NEW	RKEF160	—	12.20 (0.48)	—	18.30 (0.72)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.81 (0.15)	2, 3
NEW	RKEF185	—	13.00 (0.51)	—	18.80 (0.74)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.81 (0.15)	2, 3
NEW	RKEF250	—	14.00 (0.55)	—	20.60 (0.81)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.00 (0.12)	2, 3
NEW	RKEF300	—	16.50 (0.65)	—	21.20 (0.83)	4.32 (0.17)	5.84 (0.23)	7.60 (0.30)	—	—	3.00 (0.12)	2, 3
NEW	RKEF375	—	16.50 (0.65)	—	25.20 (0.99)	9.40 (0.37)	10.90 (0.43)	7.60 (0.30)	—	—	3.00 (0.12)	2, 3
NEW	RKEF400	—	21.00 (0.83)	—	24.90 (0.98)	9.40 (0.37)	10.90 (0.43)	7.60 (0.30)	—	—	3.00 (0.12)	2, 3
NEW	RKEF500	—	24.10 (0.95)	—	29.00 (1.14)	9.40 (0.37)	10.90 (0.43)	7.60 (0.30)	—	—	3.00 (0.12)	2, 3

Typical Time-to-trip Curves at 20°C

RKEF

A =	RKEF050	J =	RKEF300
B =	RKEF065	K =	RKEF375
C =	RKEF075	L =	RKEF400
D =	RKEF090	M =	RKEF500
E =	RKEF110		
F =	RKEF135		
G =	RKEF160		
H =	RKEF185		
I =	RKEF250		



Physical Characteristics and Environmental Specifications

RKEF
Physical Characteristics

Lead material	RXEF050 to 090: Tin-plated Copper, 0.205mm² (24AWG), ø0.51mm (0.020in.) RXEF110 to 500: Tin-plated Copper, 0.52mm² (20AWG), ø0.81mm (0.032in.)
Soldering characteristics	Solderability per ANSI/J-STD-002 Category 3
Solder heat withstand	RKEF050-RKEF185: per IEC-STD 68-2-20, Test Tb, Method 1a, condition a; can withstand 5 seconds at 260°C ±5°C
	All other sizes: per IEC-STD 68-2-20, Test Tb, Method 1a, condition b; RKEF can withstand 10 seconds at 260°C±5°C
Insulting material	Cured, flame-retardant epoxy polymer; meets UL 94V-0

Notes: Devices are not designed to be placed through a reflow process.

RKEF
Environmental Specifications

Test	Conditions	Resistance Change
Passive aging	-40°C, 1000 hours	±5%
	85°C, 1000 hours	±5%
Humidity aging	85°C, 85%RH, 1000 hours	±10%
Thermal shock	85°C, -40°C (10 times)	±10%
Solvent resistance	MIL-STD-202, Method 215F	No change

Notes:
Storage conditions: 40°C max., 70% RH max.; devices should remain in original sealed bags prior to use. Devices may not meet specificed values if these storage conditions are exceeded.

Packaging and Marking Information

	Part Number	Bag Quantity	Tape & Reel Quantity	Ammo Pack Quantity	Standard Pack Quantity	Part Marking	Agency Recognition
	RKEF 60V						
NEW	RKEF050	500	—	—	10,000	KF050	UL
NEW	RKEF065	500	—	—	10,000	KF065	UL
NEW	RKEF075	500	—	—	10,000	KF075	UL
NEW	RKEF090	500	—	—	10,000	KF090	UL
NEW	RKEF110	500	—	—	10,000	KF110	UL
NEW	RKEF135	500	—	—	10,000	KF135	UL
NEW	RKEF160	500	—	—	10,000	KF160	UL
NEW	RKEF185	500	—	—	10,000	KF185	UL
NEW	RKEF250	500	—	—	10,000	KF250	UL
NEW	RKEF300	250	—	—	250	KF300	UL
NEW	RKEF375	250	—	—	250	KF375	UL
NEW	RKEF400	250	—	—	250	KF400	UL
NEW	RKEF500	250	—	—	250	KF500	UL

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