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Garrett

Electronics Corp.

Certified
ISO-9001:2000

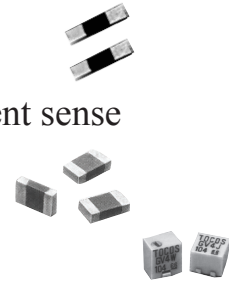
*veteran owned
small business*

Resistive Products

Surface Mount



- Arrays
- Low ohm current sense
- Test points
- Thick film
- Thin film
- Trimming Potentiometers



Leaded

- Carbon Film
- Metal Film



Value Added Services

- Exact-count continuous cut tape with or without leaders
- Exact-count production ready reels with leads and tails
- Engineering design kits, standard or customized

Same Day
Shipping



Authorized Distributor



TOCOS® AMERICA INC.

1320 W. McCoy Lane,
Santa Maria, CA 93454



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Garrett's value-added services

Packaging Options

Component Packaging Options

Exact-count partial reels with leads & tails, pick & place ready

Exact count tape with or without leaders

Full factory reels

Bulk parts stripped from tape and double bagged



* **Each package includes a bar coded label with:** manufacturer's part and lot numbers, date code, description, quantities, your internal reference and PO numbers.

Free Reeling or Leaders for surface mount products

500 units or more free reeling for: resistors, resistor arrays, ceramic capacitors, inductors, ferrite beads, diodes, transistors, fuses, thermistors, varistors

250 units or more free reeling for: trimming potentiometers, tantalum capacitors, niobium oxide capacitors, MosFETS

Engineering Design Kits

Choose a kit to fit your needs

- Stock Kits contain all standard values in a series
- Prime Value Kits contain commonly used values in a series
- Custom Kits contain only the values you choose within a series
- Project Kits contain any mix of standard components



Kits Packaging Options

Parts are provided in plastic boxes or baggies, in bulk or cut tape form

Components are stored in sturdy plastic cases, convenient notebooks or cabinets with drawers

Reel kits are available for quantities of 100 pieces or more and stored in bins

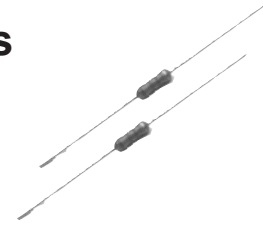




Leaded Resistors

CF1/4 & MF1/4 Series Specifications

- Carbon or Metal film
- Wide range of value in stock
- RoHS compliant



Metal Film	Carbon Film
Tolerance: 1%	Tolerance: 5%
Value Range: 10Ω - 1MΩ	Value Range: 00Ω - 22MΩ
Power Rating: 1/4 W	Power Rating: 1/4 W
Series: MF1/4D	Series: CF1/4

Part Number Determination

CF1/4C103J							
MF1/4DC1002F							
CF	1/4		C			103	J
MF	1/4	D	C			1002	F
SERIES	POWER RATING	TEMPERATURE COEFFICIENT	TERMINATION	TAPING & FORMING	PACKAGING	RESISTANCE	TOLERANCE
CF=Carbon Film Leaded Resistor	For CF: S1/4=1/4W 1/4=1/4W 1/2=1/2W S1/2=1/2W	For CF: Blank	L=SnPb C=SnCu	Blank=Straight leads, Bulk T52-Straight leads, 52mm end-to end, Tape	Blank=Bulk A=Ammo R=Reel	For CF: 2 Significant digits + 1 multiplier For MF: 3 Significant digits + 1 multiplier	B=±0.1% C=±0.25% D=±0.5% F=±1% G=±2% J=±5%

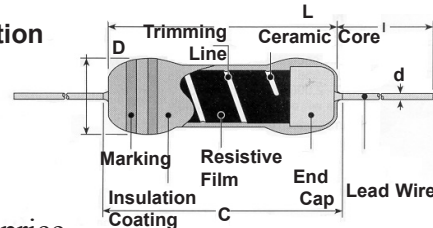
Electrical Characteristics

Series	Power Rating @ 70°C	Minimum Dielectric Withstanding Voltage	T.C.R. (ppm/°C)	Resistance Range E-24	Resistance Range E-96	Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage
CF1/4	1/4W	500V	+350 to -450 0 to -700 0 to -1000 0 to -1300	1.0 - 100K 110K - 330K 360K - 1M 1.1M - 5.1M		300V	600V
MF1/4			±100		10-1M	250V	500V

Package Dimensions (in/mm)

Series	L	C (max.)	D	d (nom.)	l
CF1/4	.240±0.2 6.1±0.5	.280 7.1	0.91±0.12 2.3±0.3	.024 0.6	.787 min 20.0 min
MF1/4	.374 9.5	.437 11.1	.138±0.16 3.5±0.4		1.18±.118 30.0±3.0

Construction



See price list booklet for current price

Leaded Resistors


KOA CF1/4 Series: 000Ω (Z25YC BULK) through 22MΩ (CF1/4C226J BULK)

KOA MF1/4 Series: 10.0Ω (MF1/4DC10R0F TAPE) through 1MΩ (MF1/4DC1004F TAPE)


Engineering Design Kits Available
See Garrett Kit Catalog

Surface Mount Low Ohm Current Sense Resistors



	Power	Lo-Ohm Thick Film	Metal Alloy
 KOA <small>SPEER ELECTRONICS, INC.</small>	Power rating: 1W, 2W, 3W Resistance range: .005Ω - 1Ω Tolerance: 1% Series: SL	Power rating: 3/4W:2010, 1W:2512 Resistance range: 0.10Ω - 0.75Ω Tolerance: 1% Series: SR73	Power rating: 1/2W:1206, 1W:2010, 1W:2512, 2W:2512 Resistance range: .001Ω - 0.01Ω Tolerance: 1% Series: TLR
Description	Ideal for power applications: <ul style="list-style-type: none"> • Motor application • Instrumentation and battery packs • Power supplies 	Designed for current sensing applications: <ul style="list-style-type: none"> • Computer • HDD • Cellular and motor circuit • Power supplies 	Suitable for large detecting current: <ul style="list-style-type: none"> • Current detecting for CPU • DC/DC dividers • Inverter power supply



	Power Metal Strip
 VISHAY Dale	Power rating: 1/4W:1206, 1/2W:2010, 1W:2512 Resistance range: .002Ω - 0.5Ω Tolerance: 1% Series: WSL
Description	Ideal for all types of power current sensing, voltage division and pulse applications: <ul style="list-style-type: none"> • Switching and linear power supplies • Instrumentation • Power amplifiers

See price list booklet for current price

Surface Mount Low Ohm Current Sense Resistors

KOA SL Series: .005Ω (SL1LTE5L00F) through 0.332Ω (SL3LTER332F)

KOA SR73 Series: .1Ω (SR732HTTER100F) through 0.75Ω (SR732HTTER750F)

KOA TLR Series: .002Ω (TLR2BDTD2L00F75) through .01Ω (TLR3AWDTE10L0F)

VISHAY-DALE WSL Series: .005Ω (WSL12065L00FEB) through 0.5Ω (WSL2512R5000FEB)

Engineering Design Kits Available
See Garrett Kit Catalog

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 Electronics Corp.

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WSL Series Surface Mount Current Sense Resistors



Specifications

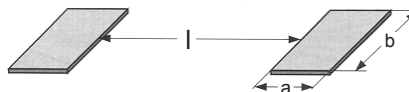
Part Number Determination

WSL2010.01FR79				
WSL	2010	.01	F	R79
SERIES	SIZE	RESISTANCE	TOLERANCE	PACKAGING
Power Metal Strip Resistors, Low Ohmic Value	0805 1206 2010 2512	.005=005ohm .01=01ohm .50=.5ohm	D=±0.5% F=±1% J=±5%	B43=Bulk R79=1000/Reel R86=4000/Reel RT1=5000/Reel

WSL2010R0100FEB				
WSL	2010	R0100	F	EB
SERIES	SIZE	RESISTANCE	TOLERANCE	LEAD FREE PACKAGING
Power Metal Strip Resistors, Low Ohmic Value	0805 1206 2010 2512	L=Miliohm R=Decimal 1L000=0.001ohm R0100=0.01ohm	D=±0.5% F=±1% J=±5%	EA=Lead (Pb)-Free, Tape & Reel EB=Lead (Pb) Free, 1K tape & Reel EK=Lead (Pb)-Free, Bulk TA=Tin/Lead, Tape & Reel (R86) TG=Tin/Lead, Tape & Reel (RT1) BA=Tin/Lead, Bulk (B43)

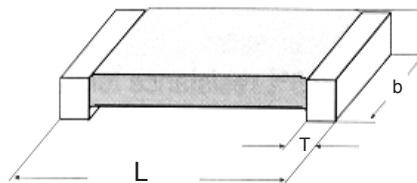
Land Pattern (in/mm)

Series	a	b	l
WSL-1206	0.050 1.27	0.070 1.78	0.055 1.40
WSL-2010	0.055 1.40	0.120 3.05	0.130 3.30
WSL-2512	0.065 1.65	0.145 3.68	0.160 4.06



Package Dimensions (in/mm)

Series	L	W	H	T
WSL-1206	0.126±0.010 3.2±0.254	0.063±0.010 1.6±0.254	0.025±0.010 0.635±0.254	0.020±0.010 0.508±0.254
WSL-2010	0.200±0.010 5.08±0.254	0.100±0.010 2.54±0.254	0.025±0.010 0.635±0.254	0.020±0.010 0.508±0.254
WSL-2512	0.250±0.010 6.35±0.254	0.125±0.010 3.18±0.254	0.025±0.010 0.635±0.254	0.030±0.010 0.762±0.254





SL Series Surface Mount Molded Current Sense Resistors



Specifications

Part Number Determination

SL1LTE20L0F					
SL	1	L	TE	20L0	F
Type	Size	Termination	Packaging	Nominal Resistance	Tolerance
SL	1=1 Watt 2=2 Watt 3=3 Watt	L: SnPb T: Sn	SL1 TE: 7" embossed plastic SL2, SL3 TE: 10" embossed plastic (1,000 pieces/reel)	±5%: 2 significant figures + 1 multiplier "R" indicates decimal on value <10Ω ±1%: 3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω All values less than 0.1Ω (100mΩ) are expressed in mΩ with "L" as decimal Example: 20mΩ, 1% = 20L0	D: ±0.5% F: ±1% G: ±2% J: ±5%

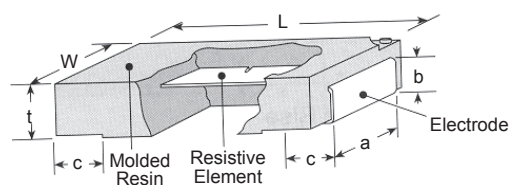
Electrical Characteristics

Series	Power Rating	T.C.R. (ppm/°C) Max.	Resistance Range	Resistance Tolerance	Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Operating Temperature Range
SL1	1W	±180: R=<14.7mΩ ±100: R=>15mΩ	5mΩ - 1MΩ	E-96 (F:±1%)	200V	400V	-55°C ~ +180°C
SL2	2W	±180: R=<10.7mΩ ±100: R=>11mΩ	5mΩ - 1MΩ	E-96 (F:±1%)	500V	1000V	
SL3	3W	±180: R=<10.7mΩ ±100: R=>11mΩ	5mΩ - 100mΩ	E-96 (F:±1%)	√ P•R	√ P•R	

Package Dimensions (in/mm)

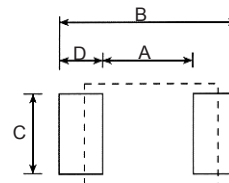
Series	L	W	t	a	b	c
SL1	.248±.012 (6.3±0.3)	.122±.008 (3.1±0.2)	.075±.008 (1.9±0.2)	.094±.008 (2.4±0.2)	.047±.012 (1.2±0.3)	.047±.012 (1.2±0.3)
SL2	.453±.012 (11.5±0.3)	.276±.008 (7.0±0.2)	.098±.008 (2.5±0.2)	.197±.008 (5.0±0.2)	.067±.02 (1.7±0.5)	.102±.02 (2.6±0.5)
SL3	.453±.012 (11.5±0.3)	.276±.008 (7.0±0.2)	.098±.008 (2.5±0.2)	.197±.008 (5.0±0.2)	.067±.02 (1.7±0.5)	.102±.02 (2.6±0.5)

Construction



Land Pattern (mm)

Series	A	B	C	D
SL1	4.6	8.0	3.0	1.7
SL2, SL3	8.0	15.0	4.0	3.5





SR73 Series Surface Mount Thick Film Current Sense Resistors



Specifications

Part Number Determination

SR732HTTER100F					
SR73	2H	T	TE	R100	F
Type	Power Rating	Termination	Packaging	Nominal Resistance	Tolerance
SR73	1E=1/16W 1J=1/10W 2A=1/8W 2B=1/4W 2E=1/2W 2H=3/4W 3A=1W	L: SnPb (3A) T: Sn	TP: 2mm pitch punched paper (1E, 1J) TD: 7" paper tape (1J, 2A, 2B, 2E) TDD: 10" paper tape (1J, 2A, 2B, 2E) TE: 7" punched plastic (2A, 2B, 2E, 2H, 3A) TED: 10" punched plastic (2A, 2B, 2E, 2H, 3A)	±5%: 2 significant figures + 1 multiplier "R" indicates decimal on value <10Ω ±1%: 3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω All values less than 0.1Ω (100mΩ) are expressed in mΩ with "L" as decimal Example: 20mΩ, 1% = 20L0	D: ±0.5% F: ±1% G: ±2% J: ±5%

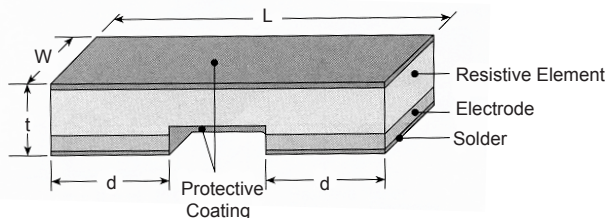
Electrical Characteristics

Series	T.C.R. (ppm/°C) Max.	Resistance Range	Absolute Maximum Working Voltage	Maximum Overload Voltage (5 Secs. Max)	Operating Temperature Range
SR732H	±100	0.1Ω - 10Ω	2.73V	6.84V	-55°C ~ +180°C
SR733A	±100	0.1Ω - 10Ω	3.16V	7.90V	

Package Dimensions (in/mm)

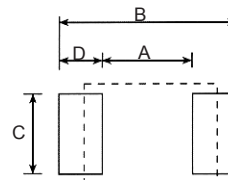
Series	L	W	c	d	t
2H (2010)	0.197±0.008 (5.0±0.2)	0.098±0.008 (2.5±0.2)	0.02±0.012 (0.5±0.3)	0.016 ^{+0.008} _{-0.004} (0.40 ^{+0.200} _{-0.100})	0.24±0.004 (0.6±0.1)
3A (2512)	0.248±0.008 (6.3±0.2)	0.122±0.008 (3.1±0.2)			

Construction



Land Pattern (mm)

Series	Size	A	B	C	D
SR732H	2010	3.5	6.3	2.3	1.4
SR733A	2512	4.6	8.0	3.0	1.7





TLR Series Surface Mount Metal Plate Current Sense Resistors



Specifications

Part Number Determination

TLR3ALTE2L00F75						
TLR	3A	L	TE	2L00	F	75
Type	Power Rating	Termination	Packaging	Nominal Resistance	Tolerance	T.C.R.
TLR	2B=0.5W 2H=1W 3A=1W 3AW=2W	L: SnPb (3A) D: SnAgCu (2B, 2H, 3A, 3AW)	TE: 7" 8mm pitch embossed plastic (3A, 3AW: 2,000 pcs/reel) (2H: 4,000 pcs/reel) TD: 4mm pitch punched paper (2B only: 5,000 pcs/reel) BK: Bulk	F: 4 digits J: 3 digits Ex: 2L00: 2mΩ	F: ±1% J: ±5%	75=75ppm/°C Nil=150ppm/°C Nil=200ppm/°C

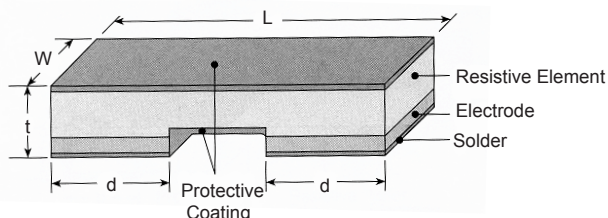
Electrical Characteristics

Series	Power Rating @ 70°C	T.C.R. (ppm/°C) Max.	Standard Resistance	Resistance Tolerance	Absolute Maximum Working Voltage	Rated Ambient Temperature	Operating Temperature Range
TLR2B	1/2W (.5W)	±150	2mΩ - 6mΩ, 8mΩ, 10mΩ - 16mΩ, 18mΩ, 20mΩ	F:±1%, J:±5%	√ P•R	+70°C	-65°C ~ +150°C
TLR2H	1W	±150	2mΩ - 8mΩ	F:±1%, J:±5%	√ P•R	+70°C	-65°C ~ +150°C
TLR3A	1W	±150	1mΩ, 2mΩ	F:±1%, J:±5%	√ P•R	+70°C	-65°C ~ +170°C
		±200	3mΩ, 4mΩ				
TLR3AW	2W	±150	2mΩ - 3mΩ	F:±1%, J:±5%	√ P•R	+70°C	-65°C ~ +155°C
			4mΩ - 8mΩ				-65°C ~ +170°C

Package Dimensions (in/mm)

Series	Resistance	L	W	d	t
TLR2B	2mΩ - 6mΩ, 8mΩ, 10mΩ - 16mΩ, 18mΩ, 20mΩ	.126±.008 (3.20±0.20)	.063±.008 (1.60±0.20)	0.20±.008 (0.50±0.20)	.024±.008 (0.60±0.20)
TLR2H	2mΩ - 6mΩ	.200±.008 (5.00±0.20)	.100±.008 (2.50±0.20)	0.60±.008 (1.50±0.20) 0.20±.008 (0.50±0.20)	.024±.008 (0.60±0.20)
	7mΩ - 8mΩ				
TLR3A	1mΩ	0.25±.01 (6.35±0.25)	0.125±.01 (3.18±0.25)	.087±.01 (2.20±0.25)	.024±.01 (0.62±0.25)
	2mΩ			0.47±.01 (1.20±0.25)	
	3mΩ			0.73±.01 (1.85±0.25)	
	4mΩ			0.47±.01 (1.20±0.25)	
TLR3AW	2mΩ - 4mΩ	.25±.01 (6.35±0.25)	.125±.01 (3.18±0.25)	.087±.01 (2.20±0.25) 0.47±.01 (1.20±0.25)	.024±.01 (0.60±0.25)
	5mΩ - 8mΩ				

Construction



Land Pattern (mm)

Series	Resistance	A	B	C	D
TLR2B		1.4	4.0	1.8	1.3
TLR2H	2mΩ - 6mΩ	1.3	6.1	3.0	2.4
	7mΩ, 8mΩ	3.3	6.1	3.0	1.4
TLR3A	1mΩ	1.95	7.55	3.83	3.05
	2mΩ	3.45	7.55	3.83	2.05
	3mΩ	2.15	7.55	3.83	2.70
	4mΩ	3.45	7.55	3.83	2.05
TLR3AW	2mΩ - 4mΩ	1.45	7.55	3.83	3.05
	5mΩ - 8mΩ	3.45	7.55	3.83	2.05

