

(CLICK ON THE RED LINKS TO VIEW CATEGORIES)

KSE OFFERS A COMPLETE FAMILY OF COMPONENTS FOR AUTOMOTIVE APPLICATIONS

ENGINES & PERFORMANCE



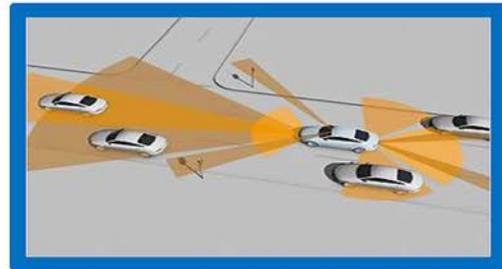
NAVIGATION/INFOTAINMENT



LIGHTING



BODY CONTROL/DRIVER ASSISTANCE



HYBRID & EV SPECIFICS



THICK FILM RESISTORS, CURRENT SENSING RESISTORS, THIN FILM RESISTORS

THICK FILM RESISTORS	
RS73/RK73G—PRECISION	
Features	Excellent resistance tolerance and T.C.R. RS73: Low T.C.R. high reliability (Ultra Precision)
Performance	Resistance tolerance $\pm 0.1\%$ (RS73), $\pm 0.25\%$ (RK73G) T.C.R.: $\pm 25 \times 10^{-6}/K$ (RS73), $\pm 50 \times 10^{-6}/K$ (RK73G) Long term resistance change only 2% (RS73)
HSG73P—HIGH TEMPERATURE	
Features	Suitable for conductive glue mounting, superior to general type pulse withstanding voltage and higher power
Performance	Operating temp range: $-55^{\circ}C$ to $200^{\circ}C$ (Au plating)
WK73R—WIDE TERMINAL TYPE	
Features	High rated power and resistance to heat cycle, 0204 to 1225 chip size
Performance	Power rating: 0.33-3W
SG73 SERIES—ANTI-SURGE/ANTI-PULSE	
Features	SG73S: Anti-surge (Precision) SG73P: Anti-pulse (Precision) SG73G: Low T.C.R. (Ultra Precision)
Performance	T.C.R.: $\pm 50 \times 10^{-6}/K$ (SG73G)
HV73V—HIGH VOLTAGE	
Features	Excellent for higher working voltages 0603 to 1206 chip size
Performance	Max. working voltage: 800V(1206 chip size)
□_73-RT—ANTI-SULFURATION	
Features	Excellent anti-sulfuration characteristic Line up of various types General precision, anti-surge, wide terminal, high voltage, network, low resistance
Performance	Resistance tolerance: $\pm 0.1\%$ to $\pm 20\%$

THIN FILM RESISTORS	
HVDP08—THIN FILM RESISTORS NETWORK FOR HIGH VOLTAGE DIVIDER	
Features	High precision, high voltage divider Relative precision of pair resistors is guaranteed High reliability, long term stability package
Performance	Max. working voltage: 1,000V Resistance range: to 51M Ω Operating temp. range: $-55^{\circ}C$ to $155^{\circ}C$
RN73H—THIN FILM FLAT CHIP RESISTORS	
Features	High precision Excellent long term stability 0402 to 1210 chip size
Performance	Resistance tolerance: $\pm 0.05\%$ T.C.R.: $\pm 5 \times 10^{-6}/K$ Operating temp. range: $-55^{\circ}C$ to $155^{\circ}C$
WN73H—THIN FILM FLAT CHIP RESISTORS	
Features	High precision Wide terminal 0306, 0612 chip size
Performance	Resistance tolerance: $\pm 0.1\%$ T.C.R.: $\pm 10 \times 10^{-6}/K$ Operating temp. range: $-55^{\circ}C$ to $155^{\circ}C$

CURRENT SENSING RESISTORS	
HS—LARGE CURRENT TYPE	
Features	Bus bar and cable can be screwed on Correct electric current detection by voltage pins is possible
Performance	Current rating: to 1,000A Resistance rating: 50 μ to 200 $\mu\Omega$ T.C.R.: $\pm 50 \times 10^{-6}/K$
PSF4/PSL2—CHIP TYPE POWER SHUNT	
Features	Metal plate type 2 terminal: PSL2 (2512 inch size) 4 terminal: PSF4 (1216 inch size)
Performance	Resistance range: PSL2: 0.2m Ω to 0.5m Ω , PSF4: 0.5m Ω , 1m Ω Power rating 8-9W (PSL2), 3-5W (PSF4) T.C.R.: $\pm 50 \times 10^{-6}/K$ (PSF4)
TLR SERIES—METAL PLATE	
Features	0402 to 2512 chip size TLRZ: jumper type, 0.2m Ω Max. TLRH: Wide resistance range: 6m to 270m Ω (2512 chip size)
Performance	Resistance range: 0.5m to 270m Ω Power rating: 0.25-5W T.C.R.: Down to $\pm 50 \times 10^{-6}/K$
SL SERIES—MOLDED TYPE	
Features	Excellent terminal strength
Performance	Resistance range: 0.5m to 360m Ω Power rating: 0.75 to 7W T.C.R.: Down to $\pm 50 \times 10^{-6}/K$
WU73/WK73S—THICK FILM TERMINAL TYPE	
Features	Thick film wide termination, 10m to 9.76 Ω Resistant to heat cycle WU73: low T.C.R. type (0612 chip size)
Performance	Power rating: 0.75 to 3W T.C.R.: $\pm 75 \times 10^{-6}/K$ (WU73)
UR73V/SR73—THICK FILM	
Features	Thick film type, 10m to 10 Ω SR73: 0201 to 2512 chip size UR73V: low T.C.R. type (0805, 1206 chip size)
Performance	Power rating: 0.1 to 2W T.C.R.: Down to $\pm 75 \times 10^{-6}/K$

THERMAL SENSORS, POWER RESISTORS, LTCC SUBSTRATE, AND CIRCUIT PROTECTORS

THERMAL SENSORS	
LTV3V—LINEAR PTC FLAT CHIP THERMISTORS	
Features	SMD thin film thermal sensors
Performance	Rated ambient temp.: 85°C Resistance tolerance: ±2%, ±5% T.C.R.: ±150 - 4500 x 10 ⁻⁶ /K
SDT310VASP2—SMALL TYPE PLATINUM THIN THERMAL SENSORS	
Features	Resistance value 20Ω Suitable as a heater of hot film flow sensor Thermal time constant: 2.8s
Performance	Resistance: ±1% tolerance Power rating: 0.336mW Operating temp. range: -55°C to 600°C
SDT101/SDT73V—PLATINUM THIN THERMAL SENSORS	
Features	SDT101A, SDT101B: Leaded type (Resistance: 10,100, 500Ω) SDT101SA: Leaded type (Resistance: 1KΩ) SDT73V: SMD type (Resistance: 100Ω, 500Ω)
Performance	Resistance tolerance: ±0.5%, (SDT101SA, SDT101B); ±2 (SDT101SA) T.C.R.: ±3500 x 10 ⁻⁶ /K (SDT101), ±3850 x 10 ⁻⁶ /K (SDT73V) Operating temp. range: -55°C to 300°C (SDT101B)(SDT73V: 155°C)

POWER RESISTORS	
BGRV—CERAMIC CASE RESISTORS	
Features	BGRV: Wirewound resistors with glass core BSRV: Metal oxide film resistors BWRV: Wirewound resistors with ceramic core
Performance	Resistance rating: 1 to 75KΩ Power rating: 3 to 60W Operating temp. range: -40°C to +155°C
CPCN—CERAMIC RESISTORS/NOISE REDUCTION	
Features	Noise reduction of ignition circuit 10.7 x 3.5mm to 18.3 x 7.2mm 2NS: SUS304 electrode cap
Performance	Resistance: 1K, 2K, 5K, 10K, 15KΩ Power rating: 0.5 to 2W Operating temp. range: -40°C to +200°C

LTCC SUBSTRATE	
KLC—LTCC MULTILAYER SUBSTRATE	
Features	Excellent high frequency performance ceramics of low dielectric-loss Custom Hybrid IC is available
Performance	Dielectric constant: 6.6GHz, Thermal Expansion Coefficient: 5.5 ppm/°C Conductor resistivity: Silver 2.5μΩ cm Resistance range: 10 ~ 100K (surface), 10 ~ 200K (buried) Resistance tolerance: ±5 (surface), ±20 ~ 50 (buried)

CIRCUIT PROTECTORS	
TF16VN—CHIP CIRCUIT FUSES	
Features	SMD overcurrent protectors Rapid change temp.: -55°C to 125°C, 1000 cycles (30 mins)
Performance	Rated current: 0.40-3.15A Rated voltage: 32V DC
NV73S/NV73DL—MULTILAYER OXIDE CHIP VARISTORS	
Features	Surge voltage protectors Suitable as countermeasure against ESD and load dump surge Size: 0603 -2220
Performance	Varistor voltage: 10-165V Maximum peak current (8/20μs): 80-300A (NV73DL), 800-6000(NV73DS)

(CLICK ON THE RED LINKS TO VIEW PRODUCT INFORMATION)

NAVIGATION/INFOTAINMENT

DC-DC CONVERTER

HIGH PRECISION/HIGH RELIABILITY RESISTORS: [RN73H](#), [RS73](#), [WN73H](#)
 HIGH VOLTAGE DIVIDER: [HVDP08](#)
 CURRENT DETECTING RESISTORS: [PSF4](#), [PSL2](#), [SL/SLN](#), [TLR](#), [TLR \(HP\)](#)
 ANTI-SURGE/ANTI-PULSE RESISTORS: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 LINEAR PTC FLAT CHIP RESISTOR: [LT73V](#)
 MULTILAYER METAL OXIDE CHIP VARISTORS:
[NV73DL](#), [NV73S](#)

POWER SUPPLY CIRCUIT

HIGH PRECISION/HIGH RELIABILITY RESISTORS:
[RK73G](#), [RN73H](#), [WN73H](#)
 POWER/RESISTORS: [BGRV](#), [BSRV](#), [BWRV](#)
 CURRENT DETECTING RESISTORS: [SL/SLN](#), [SR73](#), [TLR](#), [TLR \(HP\)](#), [TLRH](#),
[UR73V](#), [WK73S](#), [WK73S \(HP\)](#), [WU73](#)
 MULTILAYER METAL OXIDE CHIP VARISTORS:
[NV73DL](#), [NV73S](#)
 CHIP CURRENT FUSES: [TF16VN](#)

DRIVER DISPLAY

HIGH PRECISION/HIGH RELIABILITY RESISTORS: [RK73G](#), [RN73H](#),
[RS73](#), [WN73H](#)
 WIDE TERMINAL RESISTORS: [WK73R](#), [WK73R \(HP\)](#), [WK73S](#),
[WK73S \(HP\)](#), [WU73](#)
 ANTI-SURGE/ANTI-PULSE RESISTORS: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 CURRENT DETECTING RESISTORS: [SL/SLN](#), [TLR](#), [TLR \(HP\)](#),
[TLRH](#), [TLRZ](#), [UR73V](#)
 LINEAR PTC FLAT CHIP RESISTORS: [LT73V](#)
 MULTILAYER METAL OXIDE CHIP VARISTORS: [NV73DL](#), [NV73S](#)
 CHIP CURRENT FUSES: [TF16VN](#)

VICS RECEIVER/GPR RECEIVER

HIGH PRECISION/HIGH RELIABILITY RESISTORS: [RK73G](#), [RN73H](#),
[RS73](#), [WN73H](#)
 WIDE TERMINAL RESISTORS: [WK73R](#), [WK73R \(HP\)](#), [WK73S](#),
[WK73S \(HP\)](#), [WU73](#)
 ANTI-SURGE/ANTI-PULSE RESISTORS: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 CURRENT DETECTING RESISTORS: [SL/SLN](#), [TLR](#), [TLR \(HP\)](#),
[TLRH](#), [TLRZ](#), [UR73V](#)
 MULTILAYER METAL OXIDE CHIP VARISTORS: [NV73DL](#), [NV73S](#)

DVD DRIVE

HIGH PRECISION/HIGH RELIABILITY RESISTORS: [RK73G](#), [RN73H](#), [WN73H](#)
 CURRENT DETECTING RESISTORS: [SL/SLN](#), [SR73](#), [SR73 \(HP\)](#), [TLR](#),
[TLR \(HP\)](#), [TLRH](#), [UR73V](#), [WK73S](#), [WK73S \(HP\)](#), [WU73](#)
 LINEAR PTC FLAT CHIP RESISTORS: [LT73V](#)
 CHIP CURRENT FUSES: [TF16VN](#)



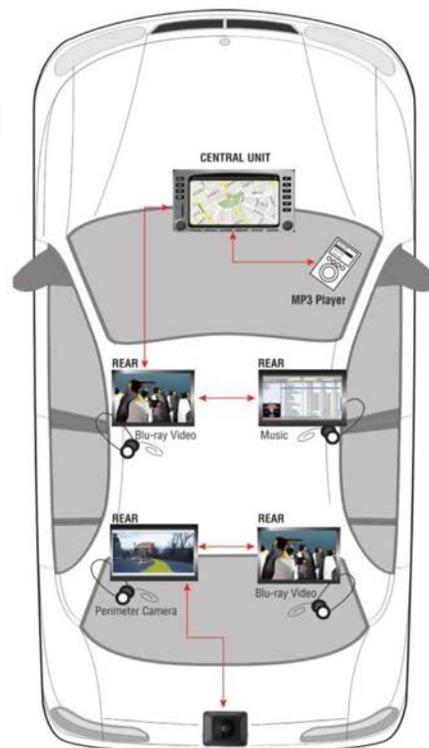
TUNER

HIGH PRECISION/HIGH RELIABILITY RESISTORS:
[RK73G](#), [RN73H](#), [WN73H](#)



ANALOG CIRCUIT

HIGH PRECISION/HIGH RELIABILITY RESISTORS:
[RK73G](#)
 ANTI-SURGE/ANTI-PULSE RESISTORS:
[SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 MULTILAYER METAL OXIDE CHIP VARISTORS:
[NV73DL](#), [NV73S](#)



DIGITAL CIRCUIT

HIGH PRECISION/HIGH RELIABILITY
 RESISTORS: [RK73G](#), [RN73H](#), [WN73H](#)
 ANTI-SURGE/ANTI-PULSE
 RESISTORS: [SG73](#), [SG73G](#),
[SG73P](#), [SG73S](#)

AUDIO CIRCUIT

POWER/RESISTORS:
[BGRV](#), [BSRV](#), [BWRV](#)



INTERMEDIATE FREQUENCY (I/F)

ANTI-SURGE/ANTI-PULSE
 RESISTORS: [SG73](#), [SG73G](#),
[SG73P](#), [SG73S](#)

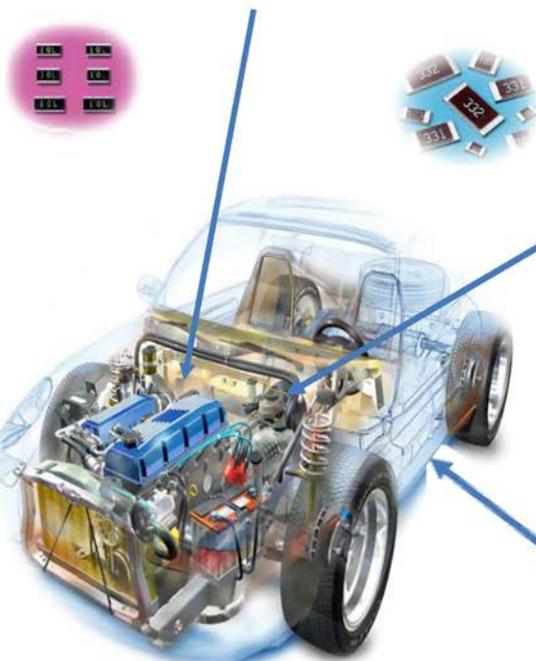
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ENGINE & PERFORMANCE

AIR FLOW SENSORS

Thermal Sensors

PLATINUM THIN FILM: [SDT101B](#), [SDT310VASP2](#)



ENGINE CONTROL/ AT CONTROL/ HYBRID PCU

Resistors

WIDE TERMINAL: [WK73R](#), [WK73R \(HP\)](#), [WK73S](#), [WK73S \(HP\)](#), [WN73H](#)
 ANTI-SURGE/ANTI-PULSE: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 ANTI-SULFUR: [RK73B-RT](#), [RK73G-RT](#), [RK73H-RT](#), [RK73Z-RT](#), [RS73-RT](#),
[SG73-RT](#), [SG73P-RT](#), [SG73S-RT](#), [SR73-RT](#), [WK73R-RT](#), [WK73R-RT \(HP\)](#),
[WK73S-RT](#), [WK73S-RT \(HP\)](#)
 TYPE CHIP POWER SHUNT: [PSF4](#), [PSL2](#)
 CURRENT DETECTING: [SL/SLN](#), [TLR](#), [TLR \(HP\)](#), [TLRH](#), [TLRZ](#), [UR73V](#), [WU73](#)
 THIN FILM FLAT CHIP: [RN73H](#), [WN73H](#)
 HIGH VOLTAGE FLAT CHIP: [HV73V](#)
 HIGH TEMPERATURE FLAT CHIP: [HSG73P](#)

Varistors

MULTILAYER METAL OXIDE CHIP: [NV73DL](#), [NV73S](#)

FUEL INJECTION

ANTI-SURGE/ANTI-PULSE: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 ANTI-SULFUR RESISTORS: [RK73B-RT](#), [RK73H-RT](#), [RK73Z-RT](#), [SG73-RT](#),
[SG73P-RT](#), [SG73S-RT](#)
 MULTILAYER METAL OXIDE CHIP VARISTORS: [NV73DL](#), [NV73S](#)
 PLATINUM THIN FILM THERMAL SENSORS: [SDT101](#), [SDT310VASP2](#)

ENGINE IGNITION

Resistors

CERAMIC: [CPCN](#)



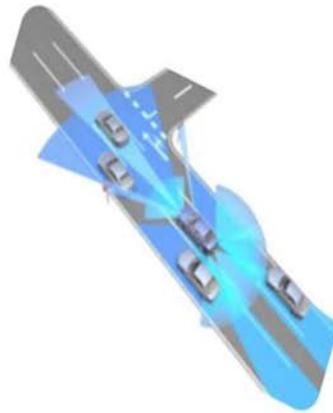
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BODY CONTROL/DRIVER ASSISTANCE

STEERING WHEEL

Resistors

CHIP TYPE POWER SHUNT: [PSF4](#), [PSL2](#)
CURRENT DETECTING: [SL/SLN](#), [TLR](#), [TLR \(HP\)](#), [TLRH](#)
ANTI-SURGE/ANTI-PULSE: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
THIN FILM FLAT CHIP: [RN73H](#), [WN73H](#)



MOTOR CONTROL (BODY CONTROL/ ELECTRIC PUMP)

Resistors

WIDE TERMINAL: [WK73S](#), [WK73S \(HP\)](#)
ANTI-SURGE/ANTI-PULSE RESISTORS: [SG73](#), [SG73G](#),
[SG73P](#), [SG73S](#)
CURRENT DETECTING: [SL/SLN](#), [SR73](#), [SR73 \(HP\)](#),
[TLR](#), [TLR \(HP\)](#), [TLRH](#), [UR73V](#), [WU73](#)
CHIP TYPE POWER SHUNT: [PSF4](#), [PSL2](#)

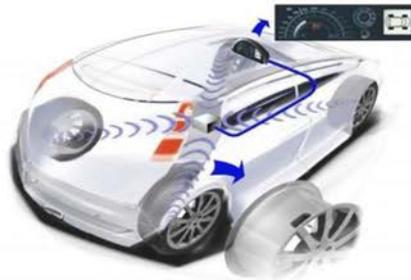
Varistors

MULTILAYER METAL OXIDE CHIP: [NV73DL](#), [NV73S](#)

BRAKING CONTROL

Resistors

WIDE TERMINAL: [WK73S](#), [WK73S \(HP\)](#)
THIN FILM FLAT CHIP: [RN73H](#), [WN73H](#)
LOW RESISTANCE FLAT CHIP: [SR73](#), [SR73 \(HP\)](#)
CHIP TYPE POWER SHUNT: [PSF4](#), [PSL2](#)
CURRENT DETECTING: [SL/SLN](#), [TLR](#), [TLR \(HP\)](#), [UR73V](#), [WU73](#)



SMART CAR/IMMOBILIZER

Resistors

CURRENT DETECTING: [SL/SLN](#)



SAFETY (GLIDE PROTECTION, ADAS, CAMERA, RADAR, IMAGE PROCESSING)

Resistors

CURRENT DETECTING: [SR73](#), [SR73 \(HP\)](#), [UR73V](#), [WK73S](#),
[WK73S \(HP\)](#), [WU73](#)
ANTI-SURGE/ANTI-PULSE: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)

Varistors

MULTILAYER METAL OXIDE CHIP: [NV73DL](#), [NV73S](#)

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HYBRID & EV SPECIFICS/LIGHTING

HYBRID/EV (PCU, INVERTER CONTROL, DC-DC CONVERTER, CHARGER, ISG)

Resistors

POWER: [BGRV](#), [BSRV](#), [BWRV](#)
 HIGH PRECISION/HIGH RELIABILITY: [RS73](#)
 THIN FILM FLAT CHIP: [RN73H](#), [WN73H](#)
 ANTI-SURGE/ANTI-PULSE: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 HIGH VOLTAGE: [HV73V](#)
 HIGH VOLTAGE DIVIDER: [HVDP08](#)
 HIGH TEMPERATURE FLAT CHIP: [HSG73P](#)
 WIDE TERMINAL: [WK73S](#), [WK73S \(HP\)](#)
 ANTI-SULFUR: [HV73V-RT](#), [RK73-RT](#), [SG73-RT](#)
 CHIP TYPE POWER SHUNT: [PSF4](#), [PSL2](#)
 CURRENT DETECTING: [SL/SLN](#), [TLR](#), [TLR \(HP\)](#)

Thermal Sensors

PLATINUM THERMAL CHIP: [SDT73V](#)
 LINEAR PTC FLAT CHIP: [LT73V](#)

Varistors

MULTILAYER METAL OXIDE CHIP: [NV73DL](#), [NV73S](#)

HYBRID/EV (BATTERY PACK)

Resistors

HIGH PRECISION/HIGH RELIABILITY: [RS73](#)
 ANTI-SURGE/ANTI-PULSE: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 POWER SHUNT: [PSF4](#), [PSL2](#)
 THIN FILM FLAT CHIP: [RN73H](#), [WN73H](#)
 HIGH VOLTAGE: [HV73V](#)
 HIGH VOLTAGE DIVIDER: [HVDP08](#)
 WIDE TERMINAL: [WK73R](#), [WK73R \(HP\)](#)
 CURRENT DETECTING: [HS](#), [SL/SLN](#), [TLR](#), [TLR \(HP\)](#)

Fuses

CHIP CURRENT: [TF16VN](#)

HEAD LIGHT CONTROL (LED, HID), REAR LAMP

Resistors

ANTI-SURGE/ANTI-PULSE: [SG73](#), [SG73G](#), [SG73P](#), [SG73S](#)
 ANTI-SULFUR: [SG73-RT](#), [SR73-RT](#), [WR73S-RT](#)
 CURRENT DETECTING: [SL/SLN](#), [WK73S](#), [WK73S \(HP\)](#)

Varistors

MULTILAYER METAL OXIDE CHIP: [NV73DL](#), [NV73S](#)

Thermal Sensors

LINEAR PTC FLAT CHIP: [LT73V](#)



BATTERY CHARGER

Resistors

POWER: [BGRV](#), [BSRV](#), [BWRV](#)
 CURRENT DETECTING: [SL/SLN](#), [TLR](#), [TLR \(HP\)](#)
 POWER SHUNT: [PSF4](#), [PSL2](#)
 HIGH VOLTAGE: [HV73V](#)

Thermal Sensors

PLATINUM THIN FILM: [SDT73V](#)
 LINEAR PTC FLAT CHIP: [LT73V](#)

