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REVISIONS

P	LTR	DESCRIPTION	DATE	DWN	APVD
	A	SEE SHEET 1	–	—	—

Electrical Specifications (-55°C to +105°C unless otherwise specified)

Input (2 terminal configuration)	
Input supply voltage range (Vcc)	3.8 - 32 Vdc (Notes 1 & 2, Figures 1 & 2)
Input current (max.) @ 5Vdc	15mAdc (Notes 1 & 2, Figures 1 & 2)
Must turn-on voltage	3.8Vdc
Must turn-off voltage	1.5Vdc
Reverse voltage protection	-32Vdc
Input (3 terminal configuration)	
Control voltage range	0 - 18 Vd
Control current (max.)	250µAdc @ 5V, 1mA @ 18V
Input supply voltage range (Vcc)	3.8 - 32 Vdc (Notes 1 & 2, Figures 1 & 2)
Input current (max.) @ 5Vdc	15mADC (Notes 1 & 2, Figures 1 & 2)
Must turn-on voltage	0.3Vdc
Must turn-off voltage	3.2Vdc
I/O	
Dielectric strength (min.)	1,000V rms
Insulation resistance (min.) @ 500Vdc	10^9 ohms
Capacitance (max.)	10pF
Output	
Continuous load current (max.) @ 25°C	2.1Adc (Figure 7)
Continuous load voltage (max.)	60Vdc
Transient blocking voltage (max.)	80Vdc (Note 5)
On resistance (max.) @ T_j = 25°C, I_L = 100mA	0.15 ohm (Note 6, Figure 6)
Output voltage drop (max.)	0.5Vdc
Leakage current (max.) @ V = 60Vdc	100µAdc
Leakage current (max.) @ V = 60Vdc, with switch status	2mAdc
Turn-on time (max.)	3 ms (Figure 3)
Turn-off time (max.)	1 ms (Figure 3)
dv/dt (min.)	100V / µs
Electrical system spike	600Vdc (Note 5)
Output chip junction temperature (max.)	125°C
Thermal resistance (max.), junction to ambient	90°C/W
Thermal resistance (max.), junction to case	25°C/W
Status	
Status supply voltage range	1 - 18Vdc
Status current (max.) @ Vstatus ≤ 0.4Vdc	600µADC (Figure 5, Note 8)
Status leakage current (max.) @ 16Vdc	10µAdc
Status turn-on time (max.)	3.5 ms (Figure 4)
Status turn-off time (max.)	8 ms (Figure 4)
Short Circuit Protection	
Current surge without tripping (max.), 100ms pulse	4.25Adc
Overload trip current (max.), 0.5 ms pulse, V = 60Vdc	10Adc
Trip time (typical), turning on into short	400µs
Trip time (typical), shorting while relay is on	280µs

Environmental Characteristics

Ambient Temperature Range —
Operating — -55°C to +105°C
Storage — -55°C to +105°C

Vibration Resistance —
100 G's, 10-3,000 Hz

Shock Resistance —
50 G's, 11 ms pulse

Constant Acceleration Resistance (Y1 axis) —
5,000 G's

Mechanical Characteristics

Weight (approx.) —
.176 oz. (5 grams)

Materials —
Header — KOVAR
Cover — Nickel
Pins — KOVAR, gold plated

Figure 1 - Maximum Input Current vs. Input Voltage

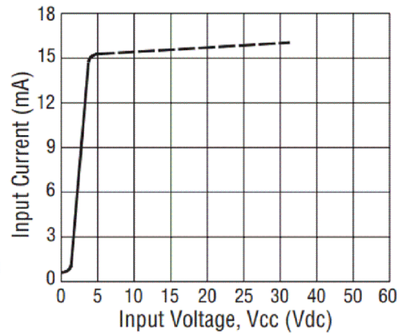


Figure 2 - Series Resistance vs. Vcc Supply Voltage (Note 1)

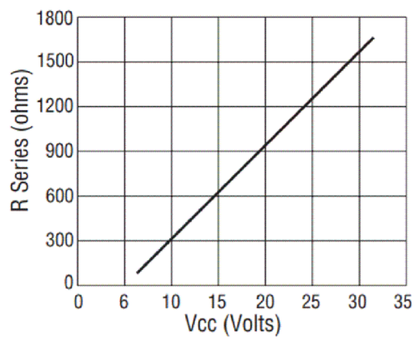


Figure 3 - Turn-on and Turn-off Timing

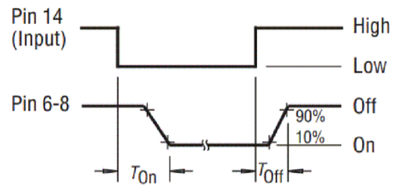


Figure 4 - Output Status Timing

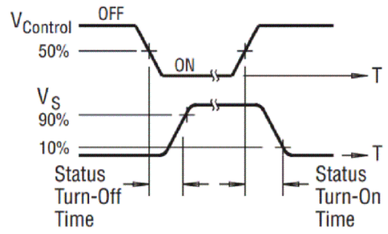


Figure 5 - Status Resistor vs. Status Supply Voltage

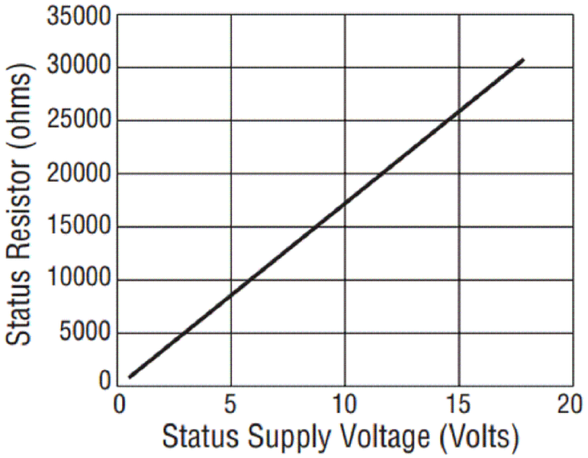
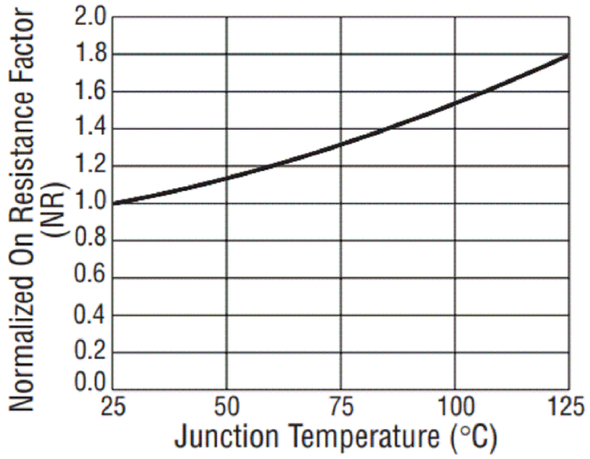


Figure 6 - On-Resistance vs. Temperature (Note 6)



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DIMENSIONS: INCHES

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC ± –
1 PLC ± –
2 PLC ± –
3 PLC ± –
4 PLC ± –
ANGLES ± –

MATERIAL –
FINISH –

DWN	VM	12SEP2019
CHK	RV	12SEP2019
APVD	DH	12SEP2019
PRODUCT SPEC	—	
APPLICATION SPEC	—	
WEIGHT	–	

TE Connectivity

NAME
DS11 SERIES SOLID STATE RELAY
–
–

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A3	–	C-DS11-SERIES	—

CUSTOMER DRAWING | SCALE NTS | SHEET 1 OF 3 | REV A

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REVISIONS

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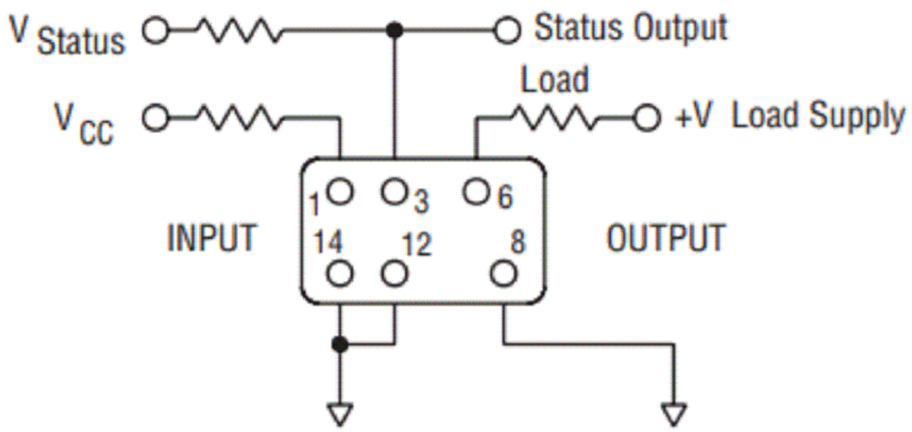
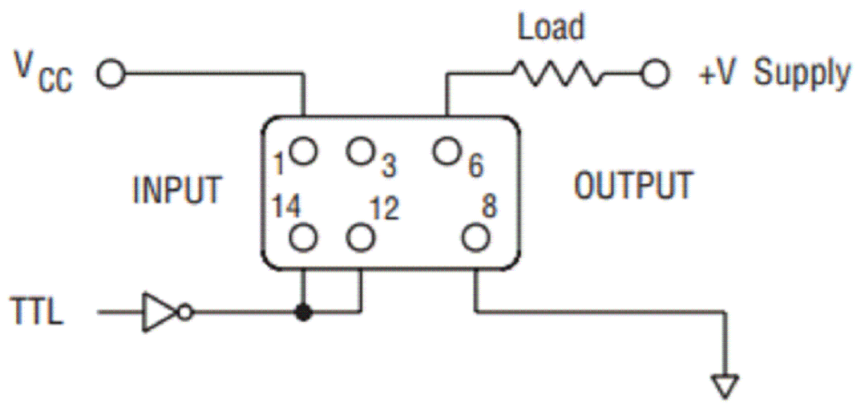
2 Terminal Input Configuration

Direct Drive (Status Optional)

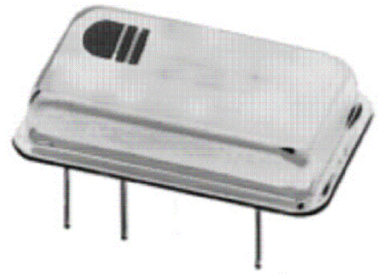


TTL Drive



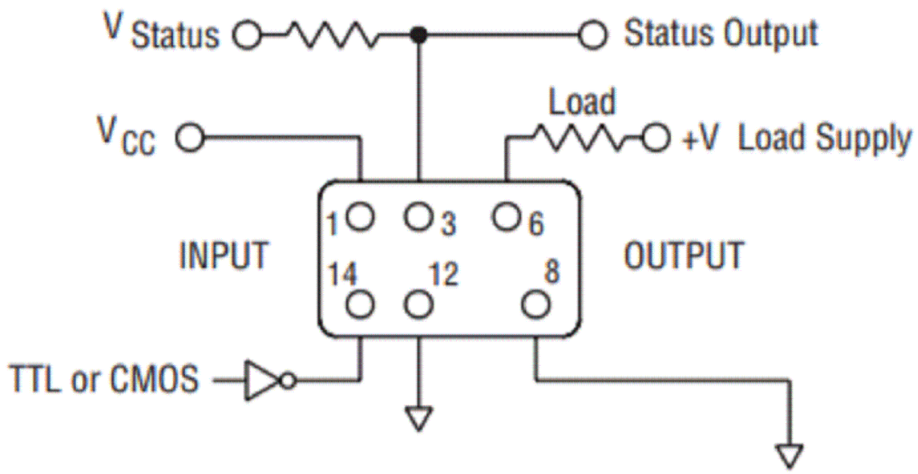
Product Facts

- Standard options: short circuit/overload protection, switch status and trip status
- Optically coupled all solid state relay
- TTL & CMOS compatible input
- Low on-resistance power MOSFET output
- Tested per MIL-PRF-28750D and approved to DSCC drawing 88062 with “Y” level screening

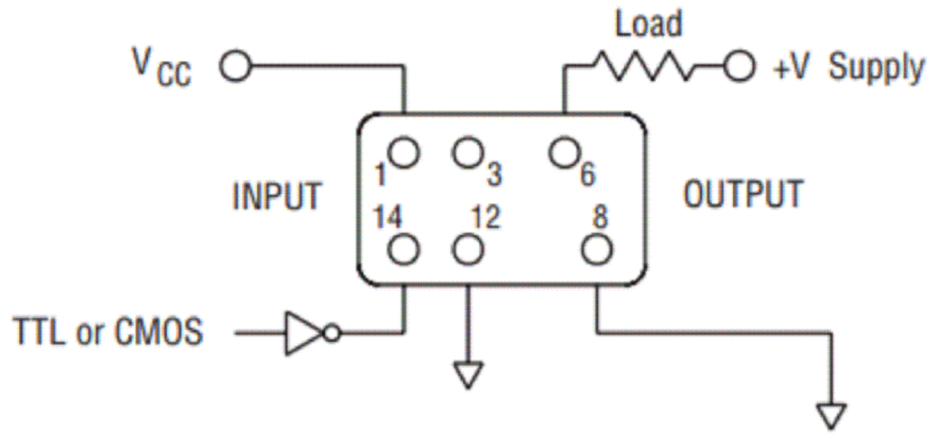


3 Terminal Input Configuration

With Output Status



Without Output Status



KILOVAC Part No.	DSCC Dwg. No.	Relay Version
DS11-1Y	88062-008	Basic relay
DS11-1000	88062-004	Relay w/ short circuit protection
DS11-1001	88062-006	Relay w/ switch status
DS11-1002	88062-002	Relay w/ short circuit protection and switch status
DS11-1003	N/A	Relay w/ short circuit protection and trip status

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0 PLC ± –
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2 PLC ± –
3 PLC ± –
4 PLC ± –
ANGLES ± –

MATERIAL –

FINISH –

DWN VM 12SEP2019
CHK RV 12SEP2019
APVD DH 12SEP2019
PRODUCT SPEC –
APPLICATION SPEC –
WEIGHT –

CUSTOMER DRAWING

TE Connectivity

NAME
DS11 SERIES SOLID STATE RELAY
–
–

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A3	–	C-DS11-SERIES	—

SCALE NTS SHEET 2 OF 3 REV A

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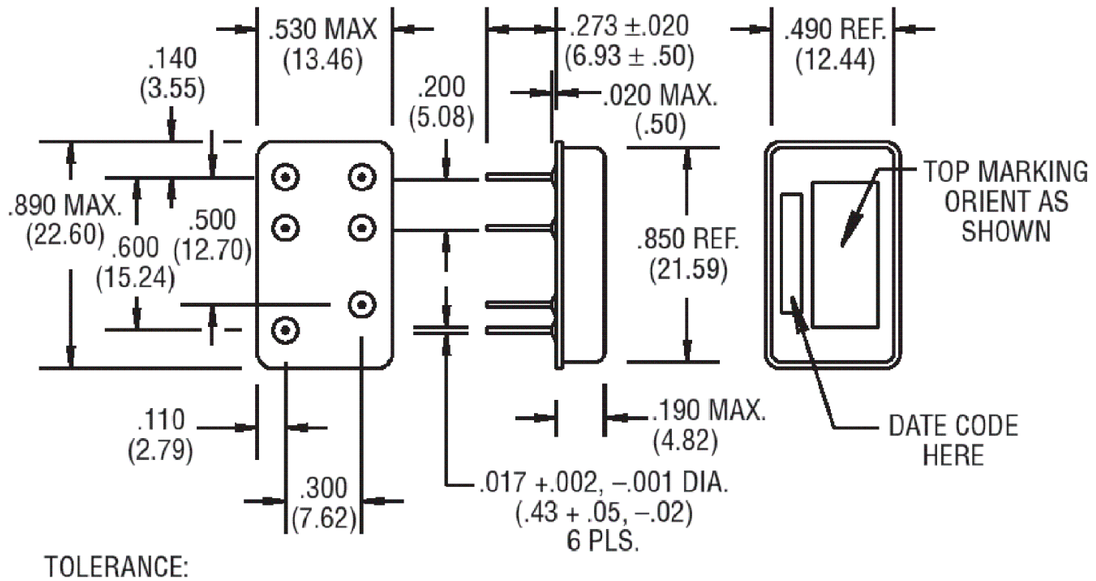
	–	SEE SHEET 1	–	—	—

Figure 9 - Outline Dimensions



TOLERANCE:
± 0.010 (0.25mm) FOR 2 PLACE DECIMALS,
± 0.005 (0.13mm) FOR 3 PLACE DECIMALS.
UNLESS OTHERWISE SPECIFIED

Figure 7 - Temperature Derating Curve

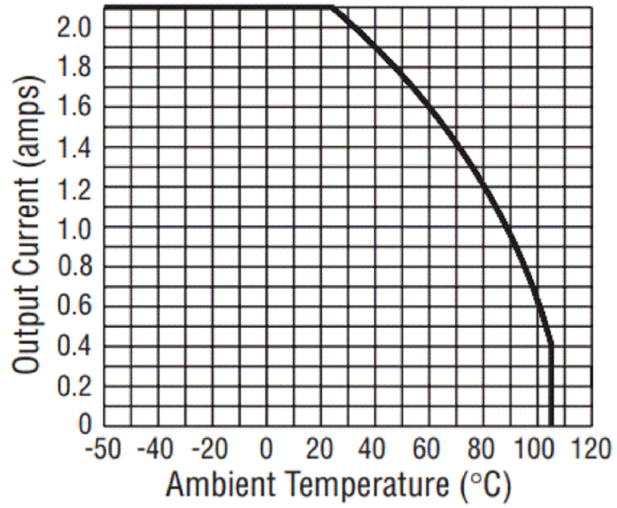
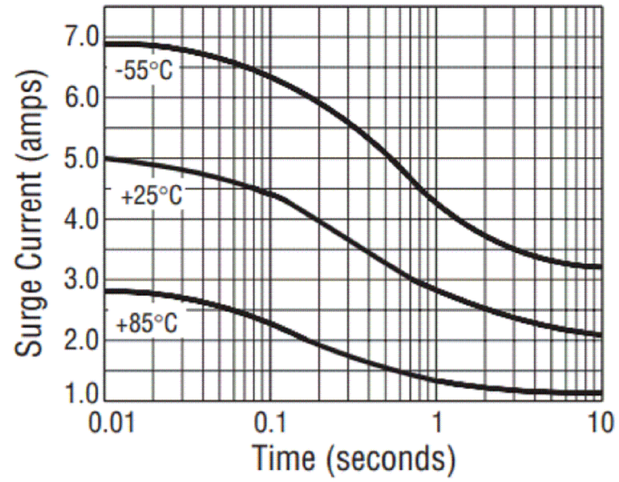


Figure 8 - Maximum Surge Current Without Tripping



Notes

1. 2 terminal input configuration is compatible with CMOS or open collector TTL (with pull-up resistor). For Vcc levels above 6Vdc, a series limiting resistor is required. See Fig. 2 for resistor value. Use standard resistor value equal to or less than value from the curve.
2. Input transitions to be ≤ 1ms duration, and input direct drive should be "bounceless contact" type.
3. Vcc = 5Vdc for all tests unless otherwise specified.
4. All DS11 Series relays may drive loads connected to either positive or negative referenced power supply lines. Reversing polarity of output may cause permanent damage. Inductive loads must be diode suppressed.
5. Transient blocking voltage and electrical system spike tests are performed per MIL-STD-704 (28VDC systems).
6. To determine the maximum on-resistance at any given junction temperature, multiply on-resistance at 25°C (0.15 ohm) by normalized on-resistance factor from curve (Fig. 6).
7. Overload testing per MIL-R-28750 is constrained to the limits imposed by the short circuit protection requirements of this specification and DSCC drawing 88062. Load circuit series inductance for "load shorted" mode of operation to be limited to 50mH max. Maximum repetition rate into a shorted load should not exceed 10 Hz.
8. Proper operation of the status feedback requires a status pull-up resistor. See Fig. 5 for status resistor value.

ALL DIMENSIONS ARE IN INCHES(MM)

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FINISH –

DWN	VM	12SEP2019
CHK	RV	12SEP2019
APVD	DH	12SEP2019
PRODUCT SPEC	—	
APPLICATION SPEC	—	
WEIGHT	—	

TE Connectivity

NAME: DS11 SERIES SOLID STATE RELAY
–
–

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A3	–	C-DS11-SERIES	—

CUSTOMER DRAWING | SCALE NTS | SHEET 3 OF 3 | REV A