

DG85F Series Automotive / Industrial Relay

RoHS



- General purpose automotive or industrial relays
- High inrush capabilities
- · PCB Mounting option
- Ideal for DC Motor Control
- Industry standard size and footprint
- · Optimised for 24VDC switching

Max. switching voltage DC 24VDC (current dependent - see fig. 3) Max. continuous current SPST-NO 60A, SPDT (NO/NC) 60A40A Max. switching current (AgSnOlnO) make SPST-NO 120A, SPDT (NO/NC) 120A45A Max. switching current witching current break SPST-NO 60A, SPDT (NO/NC) 120A45A Min. switching current (AgNi) 0.1A 12VDC Contact gap > 0.5 mm Initial resistance < 100mΩ, max. at 0.1A/6VDC Coll Nominal voltage DC 624V Must release voltage			Compliant V				
D G 8 5 F - 7 0 2 1 - 9 6 - 1 0 2 4 - M 1 D E	Contacts		Ordering Code				
Max. switching voltage DC 24VDC (current dependent - see fig. 3) Max. continuous current SPST-NO 60A, SPDT (NO/NC) 60A40A Max. switching current \(\text{ NgSnOlnO} \) make SPST-NO 60A, SPDT (NO/NC) 120A45A Max. switching current \(\text{ NgNOlnO} \) break SPST-NO 60A, SPDT (NO/NC) 120A45A Max. switching current (AgNi)	Contact arrangement	SPST-NO (1 Form A); SPDT (1 Form C)					
Max. continuous current SPST-NO 60A, SPDT (NO/NC) 60A/40A Max. switching current² (AgSnOlnO) make SPST-NO 120A, SPDT (NO/NC) 120A/45A Max. switching current break SPST-NO 60A, SPDT (NO/NC) 60A/40A Min. switching current (AgNi) 0.14 12VDC Contact gap > 0.5mm Min. switching current (AgNi) 0.14 12VDC Contact gap > 0.5mm Insulation resistance 100mQ, max. at 0.1A/6VDC 21: SPST-NO (1 NO, 1 Form A) Must release voltage 20.1Un Coperating range of supply voltage See table 1 Rated power consumption DC 2.3W; 2.5W with resistor See table 1 Insulation Insulation resistance 100MQ at 500VDC, 50%RH See table 1 See table 1 Contact arrangement 1: SPDT (1 C/O, 1 Form A) 1: SPST-NO (1 NO, 1 Form A)	Contact material	AgNi0.15; AgNi90/10; AgSnOInO	DG85F - 7 0 2 1 - 9 6 - 1 0 2 4 - M 1 D R				
Max. switching current AgSnOlnO make SPST-NO 120A, SPDT (NO/NC) 120A/45A Contact material 20: AgNI 70: AgSnOlnO	Max. switching voltage DC	24VDC (current dependent - see fig.3)					
Max. switching current (AgSnOlnO) make SPST-NO 120A, SPDT (NO/NC) 120A/45A Max. switching current break SPST-NO 60A, SPDT (NO/NC) 60A/40A Min. switching current (AgNi) 0.1A 12VDC 80. AgNi0.15* Contact gap > 0.5mm Initial resistance < 100mΩ, max. at 0.1A/6VDC Cotlact arrangement Initial resistance	Max. continuous current	SPST-NO 60A, SPDT (NO/NC) 60A/40A					
Max. switching current (AgNi) 0.1A 12VDC 80. AgNi0.15* Contact gap > 0.5mm Initial resistance < 100mΩ, max. at 0.1A/6VDC Contact gargement 11: SPDT (1 C/O, 1 Form C) Coil Nominal voltage DC 624V 21: SPST-NO (1 N/O, 1 Form A) Must release voltage 20.1Un Operating range of supply voltage See table 1 3: In cover, sealed (IPP7) Rated power consumption DC 2.3W; 2.5W with resistor 5: In cover (IP54) with mounting bracket (integral plastic, unless optional metal bracket selected) Dielectric strength coil to contact 500Vrms, 1min 5: for PCB General Data Operating time typ. 2ms Release time typ. 2ms Mounting & terminations Blank: No option Mit Metal bracket M2: Bent metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & metal bracket S2: Skirted cover & metal bracket S2: Skirted cover & metal bracket Parallel component options Blank: No option R: Integral resistor Dieltom resistance DA1.27mm 10-40Hz / 40-70Hz: 5g DR: Integral diode +85/-86 DR: Integral diode +85/-86 DR: Integral diode +85/-86 DR: Integral diode reversed -85/+86-standard	Max. switching current³ (AgSnOlnO) make	SPST-NO 120A, SPDT (NO/NC) 120A/45A	Contact material				
Min. switching current (AgNi) 0.1A 12VDC 80: AgNi0.15 ° Consult factory	Max. switching current break	SPST-NO 60A, SPDT (NO/NC) 60A/40A					
Initial resistance \$100mΩ, max. at 0.1A/6VDC Coil Nominal voltage DC 624V 11: SPDT (1 C/O, 1 Form C) 21: SPST-NO (1 N/O, 1 Form A) Must release voltage 20.1Un Operating range of supply voltage See table 1 Rated power consumption DC 2.3W; 2.5W with resistor Insulation Insulation Insulation resistance 100MΩ at 500VDC, 50%RH Dielectric strength coil to contact 500Vrms, 1min Connection mode open contacts 500Vrms, 1min General Data Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10³ Mounting & terminations Electrical life² ops. 1 x 10² Environmental Ambient temperature operating 40 to 125°C (Above 85°C - consult factory) Shock resistance functional 20g, 11ms destructive 100g ADA1.27mm 10-40Hz / 40-70Hz: 5g Contact arrangement 11: SPDT (1 C/O, 1 Form C) 21: SPST-NO (1 N/O, 1 Form A) Environmental protection 3: In cover, sealed (IP67) 7: In cover, dust cover (IP54) 9: Cover (IP54) with mounting bracket (integral plastic, unless optional metal bracket selected) Connection mode 5: for PCB 5: for PCB 5: for PCB 5: Flat blades D: Double 87 flat blades (SPST-NO only) D: Double 87 flat blades (SPST-NO only) Final Protection 3: In cover, sealed (IP67) 7: In cover, dust cover (IP54) 9: Cover (IP54) with mounting bracket (integral plastic, unless optional metal bracket selected) Connection mode 5: for PCB 5: for PCB 5: for PCB 5: for PCB 5: Flat blades D: Double 87 flat blades (SPST-NO only) D: Double 87 flat blades (SPST-NO only) Final Protection 3: In cover, sealed (IP67) 7: In cover, dust cover (IP54) 9: Cover (IP54) Wounting & terminations Blank: No options Blank: No option R: Integral component options Blank: No option R: Integral diode reversed -85/+86 -standard	Min. switching current (AgNi)	0.1A 12VDC					
Coil 11: SPDT (1 C/O, 1 Form C) Nominal voltage DC 624V 21: SPST-NO (1 N/O, 1 Form A) Must release voltage ≥0.1Un Environmental protection Operating range of supply voltage See table 1 Environmental protection Rated power consumption DC 2.3W; 2.5W with resistor Environmental protection Insulation Insulation In cover, sealed (IP67) Insulation resistance 100MΩ at 500VDC, 50%RH Dielectric strength coil to contact 500Vrms, 1min Connection mode General Data 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) General Ifie? ops. 1 x 10° Mounting & terminations Blank: No options M1: Metal bracket Mechanical life ops. 1 x 10° M1: Metal bracket Environmental Sixited cover & metal bracket Shock resistance functional 20g, 11ms Mobility of the properties	Contact gap	>0.5mm	* Consult factory				
Nominal voltage DC 624V 21: SPST-NO (1 N/O, 1 Form A) Must release voltage 20.1Un Operating range of supply voltage See table 1 Rated power consumption DC 2.3W; 2.5W with resistor Insulation Insulation Insulation resistance 100MΩ at 500VDC, 50%RH Dielectric strength coil to contact 500Vrms, 1min Connection mode Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10² Mechanical life ops. 1 x 10² Environmental Protection 3: In cover, sealed (IP67) 7: In cover, dust cover (IP54) 9: Cover (IP54) with mounting bracket (integral plastic, unless optional metal bracket selected) Connection mode 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options Min: Metal bracket M2: Bent metal bracket M2: Bent metal bracket M2: Bent metal bracket M3: Skirted cover & metal bracket M2: Skirted cover & metal bracket M3: Skirted cover & metal bracket M3: Skirted cover & bent metal bracket M4: Dear and bracket M5: Skirted cover & bent metal bracket M6: Flat blades Mounting & terminations Blank: No options M1: Metal bracket M2: Sent metal bracket M3: Skirted cover & metal bracket M3: Skirted cover & metal bracket M3: Skirted cover & bent metal bracket M3: Skirted cover & bent metal bracket M3: Skirted cover & bent metal bracket M3: Integral resistor D: Integral diode +85/-86 DR: Integral diode +85/-86 DR: Integral diode +85/-86 - standard	Initial resistance	<100mΩ, max. at 0.1A/6VDC	Contact arrangement				
Must release voltage ≥0.1Un Operating range of supply voltage See table 1 Rated power consumption DC 2.3W; 2.5W with resistor Insulation Insulation Insulation Insulation Dielectric strength coil to contact operating from typ. 7ms Release time typ. 2ms Mounting & terminations Blank: No options Mechanical life operating operating 40 to 125°C (Above 85°C - consult factory) Storage 40 to +155°C Shock resistance Data Data 2.1Un Environmental protection 3: In cover, sealed (IP67) 7: In cover, dust cover (IP54) 9: Cover (IP54) with mounting bracket (integral plastic, unless optional metal bracket selected) Connection mode 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket Data Data Cover (IP54) School of the plastic, unless optional metal bracket integral metal	Coil		11: SPDT (1 C/O, 1 Form C)				
Contenting range of supply voltage See table 1 See table 2 See table 1 See table 2 See table 1 See	Nominal voltage DC	624V	Environmental protection 3: In cover, sealed (IP67) 7: In cover, dust cover (IP54)				
Operating range of supply voltage See table 1 3: In cover, sealed (IP67) Rated power consumption DC 2.3W; 2.5W with resistor 7: In cover, dust cover (IP54) Insulation 100MΩ at 500VDC, 50%RH Dielectric strength coil to contact 500Vrms, 1min Ceneral Data Connection mode Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10³ Mechanical life ops. 1 x 10² Mechanical life operating 40 to 125°C (Above 85°C - consult factory) Shock resistance functional 20g, 11ms Blank: No options Mine temperature A0 to 125°C (Above 85°C - consult factory) Parallel component options Blank: No option Release functional 20g, 11ms Blank: No option M1: Metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S1: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S1: Integral diode +85/-86 D2: Integral diode reversed -85/+86 - standard	Must release voltage	≥0.1Un					
Insulation Insulation Insulation Insulation Insulation resistance 100MΩ at 500VDC, 50%RH Dielectric strength coil to contact 500Vrms, 1min open contacts 500Vrms, 1min General Data Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10³ Mechanical life ops. 1 x 10² Environmental Ambient temperature operating -40 to +155°C Shock resistance functional 20g, 11ms destructive destructive DA1.27mm 10-40Hz / 40-70Hz: 5g P: Cover (IP54) with mounting bracket (integral plastic, unless optional metal bracket selected) Connection mode 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S3: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Operating range of supply voltage	See table 1					
Insulation Insulation resistance 100MΩ at 500VDC, 50%RH Dielectric strength coil to contact 500Vrms, 1min copen contacts 500Vrms, 1min Connection mode 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options Mchanical life copen at 1x 107 Environmental Ambient temperature operating storage 40 to +155°C Shock resistance DA1.27mm 10-40Hz / 40-70Hz: 5g plastic, unless optional metal bracket selected) Connection mode 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket Parallel component options Blank: No option R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 -standard	Rated power consumption DC	2.3W; 2.5W with resistor					
Insulation resistance 100MΩ at 500VPC, 50%RH Dielectric strength coil to contact 500Vrms, 1min open contacts 500Vrms, 1min General Data Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10⁵ Mechanical life ops. 1 x 10⁻ Environmental Ambient temperature operating storage 40 to 125°C (Above 85°C - consult factory) Another temperature destructive functional destructive DA1.27mm 10-40Hz / 40-70Hz: 5g Connection mode 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S3: Skirted cover & bent metal bracket S4: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Insulation		, , , , , ,				
open contacts 500Vrms, 1min General Data Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10⁵ Mechanical life ops. 1 x 107 Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Storage -40 to +155°C Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g 5: for PCB 6: Flat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket S2: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S2: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Insulation resistance	100MΩ at 500VDC, 50%RH	plastic, unless optional metal bracket selected)				
General Data Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10⁵ Mechanical life ops. 1 x 10⁻ Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Storage -40 to +155°C Shock resistance functional 20g, 11ms destructive 100g Vibration resistance O: Plat blades D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S3: Skirted cover & bent metal bracket S4: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Dielectric strength coil to contact	500Vrms, 1min	Connection mode				
Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10⁵ Mechanical life ops. 1 x 107 Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g D: Double 87 flat blades (SPST-NO only) Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket Parallel component options Blank: No option R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	open contacts	500Vrms, 1min	5: for PCB				
Operating time typ. 7ms Release time typ. 2ms Electrical life² ops. 1 x 10⁵ Mechanical life ops. 1 x 107 Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g Mounting & terminations Blank: No options M1: Metal bracket M2: Bent metal bracket S2: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket Parallel component options Blank: No option R: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	General Data						
Electrical life² ops. 1 x 10⁵ Mechanical life ops. 1 x 10⁻ Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Shock resistance functional 20g, 11ms Consider the destructive operating -40 to 125°C (Above 85°C - consult factory) DA1.27mm 10-40Hz / 40-70Hz: 5g Blank: No options M1: Metal bracket M2: Bent metal bracket S2: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket Parallel component options Blank: No option R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Operating time typ.	7ms	D: Double 87 flat blades (SPST-NO only)				
Electrical life ² ops. 1 x 10 ⁵ Mechanical life ops. 1 x 10 ⁷ Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g Blank: No options M1: Metal bracket M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket Parallel component options Blank: No option R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Release time typ.	2ms	Mounting & terminations				
Mechanical life ops. 1 x 107 Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Storage -40 to +155°C Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g M2: Bent metal bracket S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket S2: Integral component options R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Electrical life ² ops.	1 x 10 ⁵	_				
Environmental Ambient temperature operating -40 to 125°C (Above 85°C - consult factory) Storage -40 to +155°C Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g S1: Skirted cover & metal bracket S2: Skirted cover & bent metal bracket S2: Skirted cover & bent metal bracket S2: Integral component options R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Mechanical life ops.	1 x 10 ⁷					
storage -40 to +155°C Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g Parallel component options Blank: No option R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Environmental						
Shock resistance functional 20g, 11ms Blank: No option R: Integral resistor DA1.27mm 10-40Hz / 40-70Hz: 5g DR: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Ambient temperature operating	-40 to 125°C (Above 85°C - consult factory)					
Shock resistance functional 20g, 11ms destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g Blank: No option R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	storage	-40 to +155°C	Develled comparent entires				
destructive 100g Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g R: Integral resistor D: Integral diode +85/-86 DR: Integral diode reversed -85/+86 - standard	Shock resistance functional	20g, 11ms					
Vibration resistance DA1.27mm 10-40Hz / 40-70Hz: 5g DR: Integral diode reversed -85/+86 - standard	destructive	100g					
			9				
Di totolilii 100 000 illi 109		DA0.5mm 100-500Hz: 10g					
Dimensions L x W x H 28.3 x 28.3 x 25.0 mm (excluding terminals) Order code examples	Dimensions L x W x H	28.3 x 28.3 x 25.0 mm (excluding terminals)					
Weight approx. 40g depending on mounting DG85F-7021-75-1012 = unsealed, pcb, no bracket PC05F 7021-75 1012 = unsealed, pcb, no bracket	Weight approx.	40g depending on mounting					
DG85F-7021-76-1012 = unsealed, no bracket (standard)			DG85F-7021-76-1012 = unsealed, no bracket (standard) DG85F-7021-36-1012 = sealed, no bracket				
DG85F-7021-36-1012 - sealed, filo bracket DG85F-7021-36-1012-M1 = sealed, metal bracket							
DG85F-7021-96-1012 = unsealed, plastic bracket							
DG85F-7021-96-1012-M1 = unsealed, metal bracket			DG85F-7021-96-1012-M1 = unsealed, metal bracket				

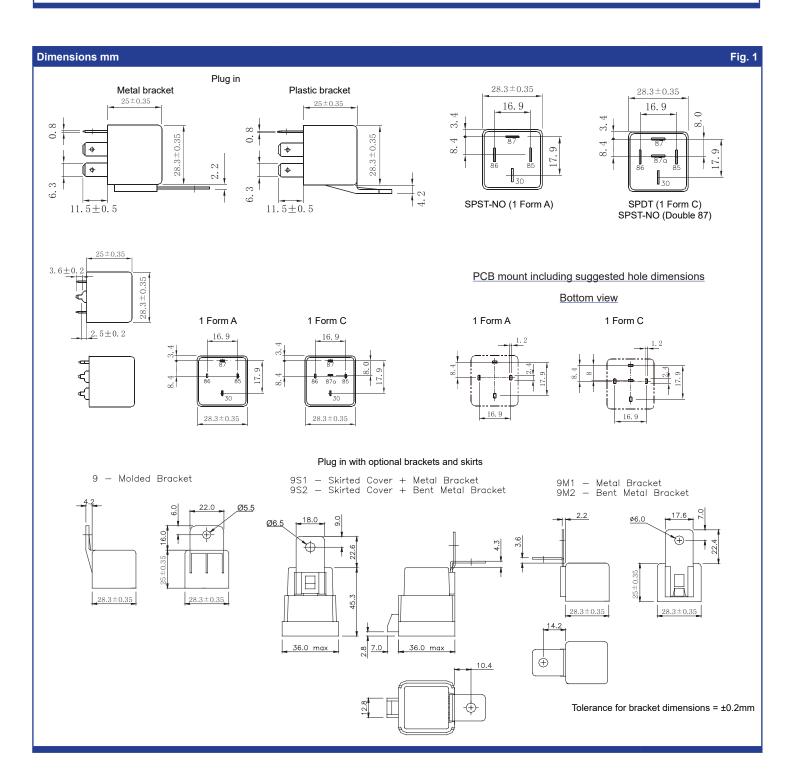
DG85F 031522JHM

Specifications are subject to change without notice. E&OE.

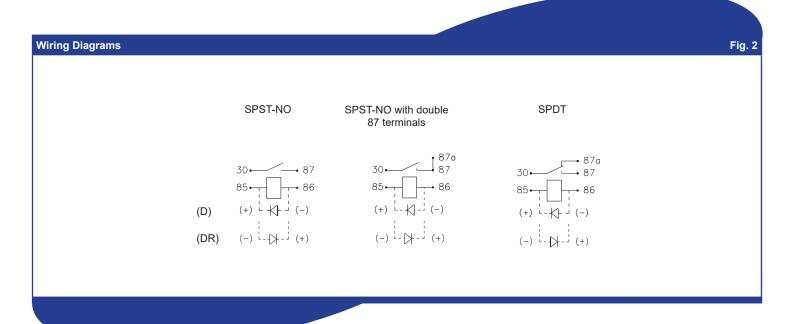


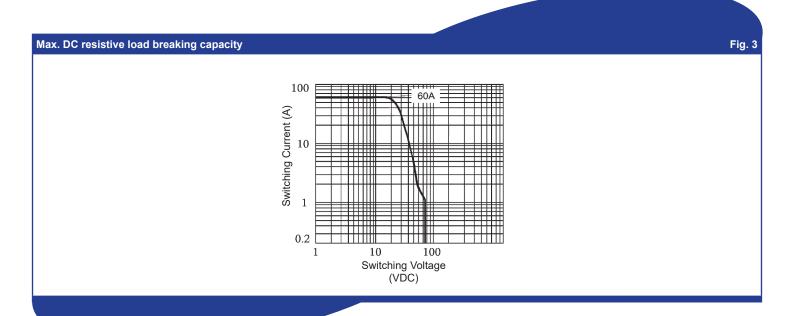
Coil Data Table 1						
Coil code	Nominal voltage (VDC)	Coil resistance Ω ±10%	Must operate voltage max. (VDC)	Max. allowable voltage (VDC)*	Must release voltage min. (VDC)	
1006	6	15.6	3.6	6.4	0.6	
1012	12	62.5	7.2	14.8	1.2	
1024	24	250	14.4	28.8	2.4	

^{*} At ambient temperature of 85°C and above, up to maximum ambient temperature of 125°C, maximum allowable voltage should be reduced by 28%.









Notes

- 1: All parameters, unless otherwise specified, are measured at ambient temperature of 23°C.
- 2: Electrical life obtained at resistive or inductive load at 60A, 15VDC with suitable arc suppression circuit attached and with operating frequency of 1 op/sec.
- 3: Maximum make current refers to lamp load inrush current.