

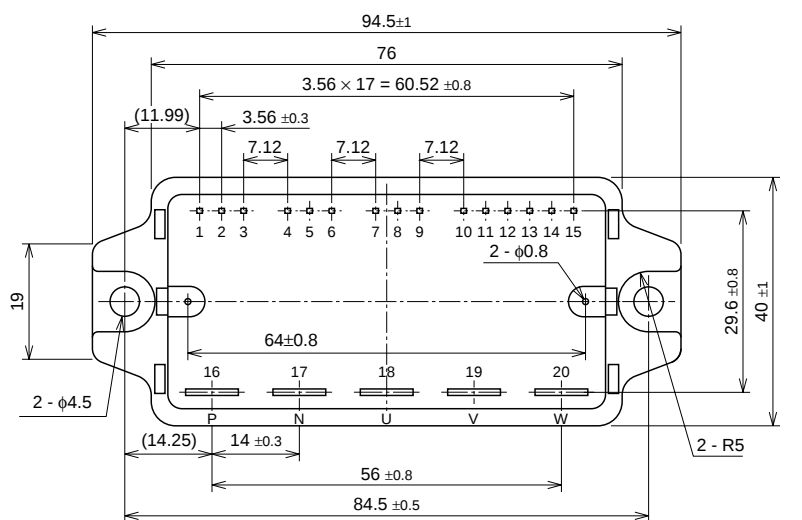
A black plastic component, likely a connector or switch, with multiple pins and a label. The component has a rectangular shape with rounded ends. It features a series of pins along the top edge and a label on the front face. The label contains the text "ADDS" and some smaller, less legible text. The component is shown from a perspective view, highlighting its three-dimensional structure.

- Yellow Card No. E80276 (N)
File No. E80271

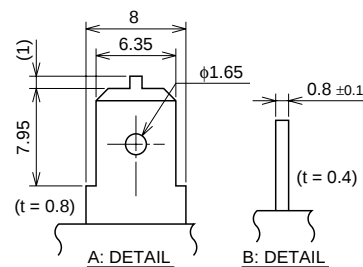
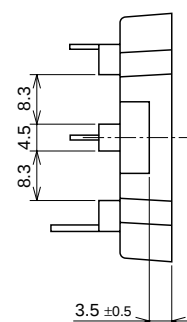
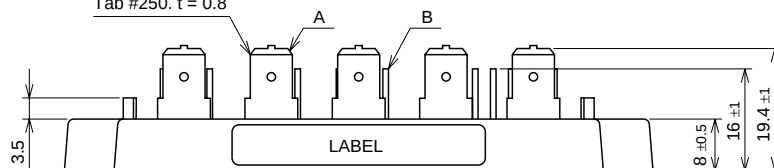
Air conditioner, mortar control

Dimensions in mm

1. VUPC	11. VN1
2. UP	12. UN
3. VUP1	13. VN
4. VVPC	14. WN
5. VP	15. FO
6. VVP1	16. P
7. VWPC	17. N
8. WP	18. U
9. VWP1	19. V
10. VNC	20. W

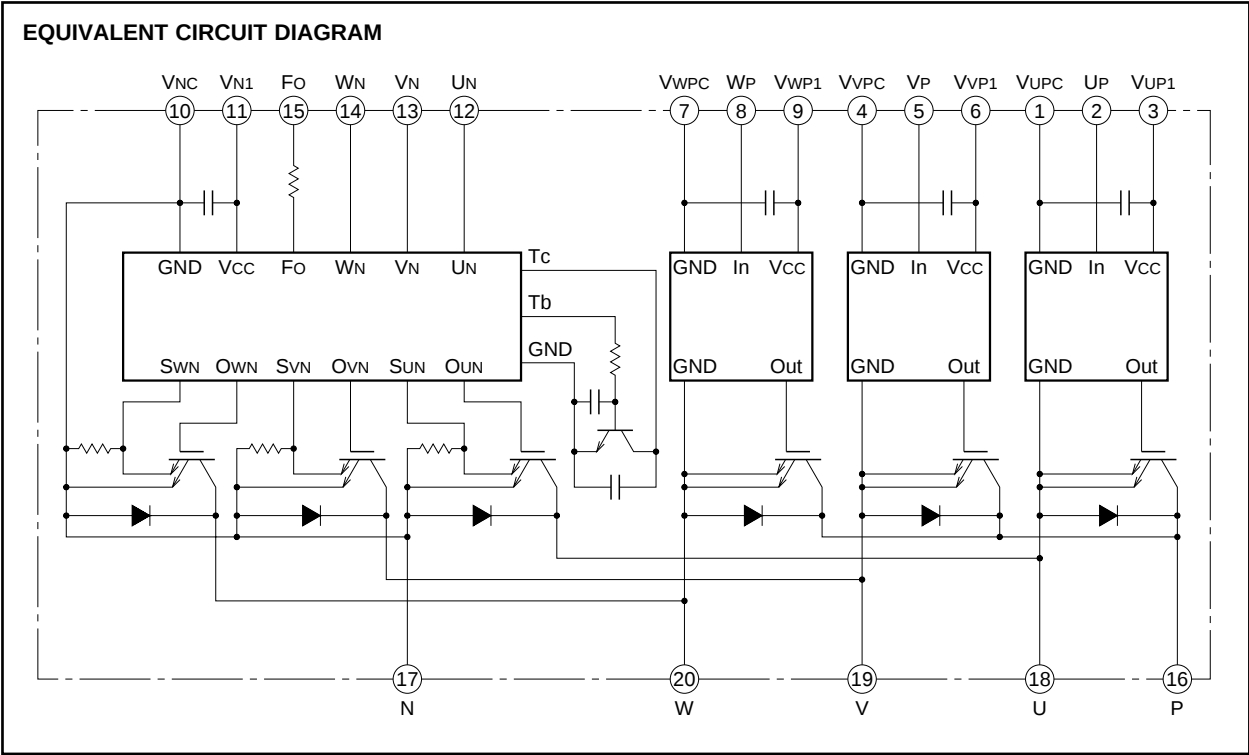


Tab #250. $t = 0.8$



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FLAT-BASE TYPE
INSULATED PACKAGE



MAXIMUM RATINGS (T_j = 25°C, unless otherwise noted)

INVERTER PART

Symbol	Parameter	Conditions	Ratings	Unit
V _{CES}	Collector-emitter voltage	V _D = 15V, I _{CIN} = 10mA	600	V
±I _C	Collector current	T _c = 25°C	20	A
±I _{CP}	Collector current (peak)	T _c = 25°C	40	A
P _C	Collector dissipation	T _c = 25°C	56	W
T _j	Junction temperature		-20 ~ +125*	°C

* maximum instantaneous T_j ≤ 150°C

CONTROL PART

Symbol	Parameter	Conditions	Ratings	Unit
V _D	Supply voltage	Applied between : V _{UP1} -V _{UPC} , V _{VP1} -V _{VPC} V _{WP1} -V _{WPC} , V _{N1} -V _{NC}	20	V
I _{CIN}	Input current	Applied between : U _P -V _{UPC} , V _P -V _{VPC} , W _P -V _{WPC} , U _N · V _N · W _N -V _{NC}	20	mA
V _{FO}	Fault output supply voltage	Applied between : F _O -V _{NC}	20	V
I _{FO}	Fault output current	Sink current of F _O terminal	20	mA

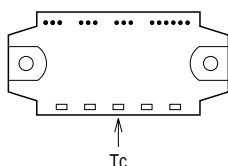
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FLAT-BASE TYPE
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TOTAL SYSTEM

Symbol	Parameter	Conditions	Ratings	Unit
V _{CC(Prot)}	Supply voltage protected by OC & SC	V _D = 13.5 ~ 16.5V, Inverter part, T _j = 125°C start	400	V
V _{CC}	Supply voltage	Applied between : P-N, operating time	450	V
V _{CC(surge)}	Supply voltage (surge)	Applied between : P-N, surge and non-operating time	500	V
T _C	Module case operating temperature	(Note 1)	-20 ~ +100	°C
T _{stg}	Storage temperature		-40 ~ +125	°C
V _{iso}	Isolation voltage	60Hz, sinusoidal, AC · 1 min	2500	V _{rms}

Note 1 : T_C measuring point is as shown below.

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise noted)

INVERTER PART

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V _{CE(sat)}	Collector-emitter saturation voltage	V _D = 15V, I _{CIN} = 10mA	—	1.8	2.6	V
		I _C = 20A, T _j = 125°C		2.0	3.0	
V _{EC}	FWDi forward voltage	-I _C = 20A, V _D = 15V, I _{CIN} = 0mA	—	2.0	3.0	V
t _{on}	Switching time	V _D = 15V, I _{CIN} = 0mA ↔ 10mA V _{CC} = 300V, I _C = 20A T _j = 125°C (Per 1 arm) Inductive Load	0.5	2.5	3.5	μs
t _{rr}			—	0.1	—	μs
t _{c(on)}			—	0.2	0.8	μs
t _{off}			—	2.5	3.5	μs
t _{c(off)}			—	0.9	2.0	μs
I _{CES}	Collector-emitter cutoff current	V _{CE} = V _{CES} , I _{CIN} = 0mA	—	—	1	mA
		T _j = 125°C		—	10	

CONTROL PART

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I _D	Circuit current	V _D = 15V, I _{CIN} = 0mA	—	25	35	mA
		V _{N1} -V _{N2} V _{XP1} -V _{XP2}		5	10	
I _{th(ON)}	Input on threshold current	Applied between : U _P -V _{UPC} , V _P -V _{VPC} , W _P -V _{WPC}	1	3	5	mA
I _{th(OFF)}	Input off threshold current	U _N · V _N · W _N -V _{N2}	1	3	5	mA
OC	Over current trip level	-20°C ≤ T _j ≤ 125°C, V _D = 15V (only N side)	28	34	—	A
SC	Short circuit trip level	-20°C ≤ T _j ≤ 125°C, V _D = 15V (only N side)	—	51	—	A
t _{off(OC)}	Over current delay time	V _D = 15V	—	10	—	μs
OT	Over temperature protection	Base-plate	100	110	120	°C
OT _r		Temperature detection, V _D = 15V		90	—	
UV	Supply circuit under voltage protection	-20°C ≤ T _j ≤ 125°C (only N side)	11.5	12.0	12.5	V
UV _r				12.5	—	V
I _{FO(H)}	Fault output current (Note 2)	V _D = 15V, V _{FO} = 15V	—	—	0.01	mA
I _{FO(L)}			—	10	15	mA
t _{FO}	Minimum fault output pulse width (Note 2)	V _D = 15V	1.0	1.8	—	ms

Note 2 : Fault output is given only when the internal OC, SC, OT & UV protection. (only N side)

Fault output of OC, SC protection given pulse.

Fault output of OT, UV protection given pulse while over level. (OT is only N side)

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THERMAL RESISTANCES

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Tye.	Max.	
R _{th(j-c)Q}	Junction to case thermal resistances	Inverter IGBT part, per 1/6 module	—	—	2.0	°C / W
R _{th(j-c)F}		Inverter FWDi part, per 1/6 module	—	—	4.5	°C / W
R _{th(c-f)}	Contact thermal resistance	Case to fin, thermal grease applied, per 1/6 module	—	—	0.4	°C / W

MECHANICAL RATINGS AND CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Tye.	Max.	
—	Mounting torque	Mounting screw : M4	0.98	1.18	1.47	N·m
—	Weight		10	12	15	kg·cm
—			—	60	—	g

RECOMMENDED CONDITIONS FOR USE

Symbol	Parameter	Test conditions	Ratings	Unit
V _{CC}	Supply voltage	Applied between : P-N	≤ 400	V
V _D		Applied between : V _{UP1} -V _{UPC} , V _{VP1} -V _{VPC} V _{WP1} -V _{WPC} , V _{UN1} -V _{UNC} (Note 3)	15 ± 1.5	V
I _{CIN(ON)}	Input on current	Applied between : U _P , V _P , W _P , U _N , V _N , W _N	≥ 5	mA
I _{CIN(OFF)}	Input off current		≤ 1	mA
f _{PWM}	PWM input frequency	Using application circuit Opto-coupler's input signal	≤ 8	kHz
t _{dead}	Arm shoot-through blocking time	Using application circuit Opto-coupler's input signal	≥ 3	μs

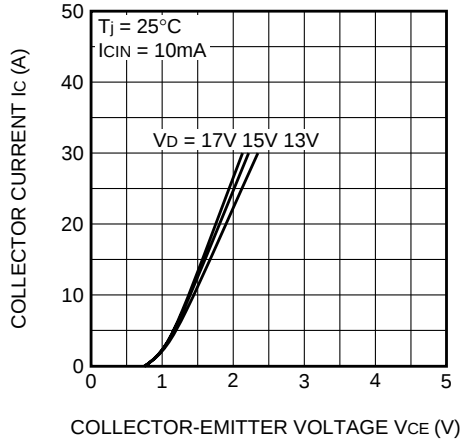
Note 3 : Permissible ripple value : dv/dt ≤ ±5V/μs, V_{ripple} ≤ 2V_{P-P}

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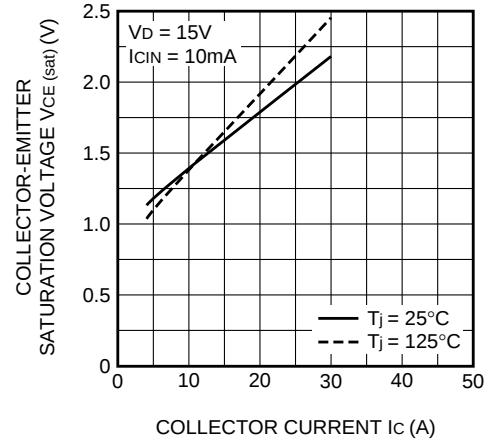
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PERFORMANCE CURVES

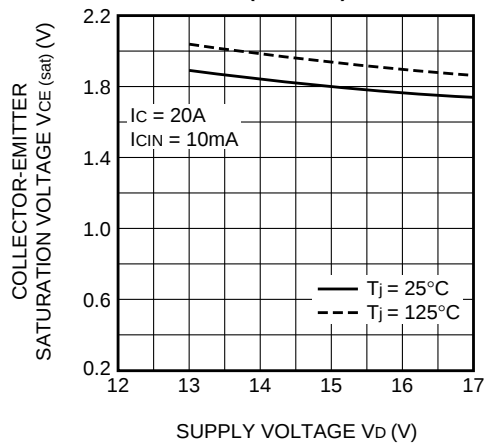
OUTPUT CHARACTERISTICS
(TYPICAL)



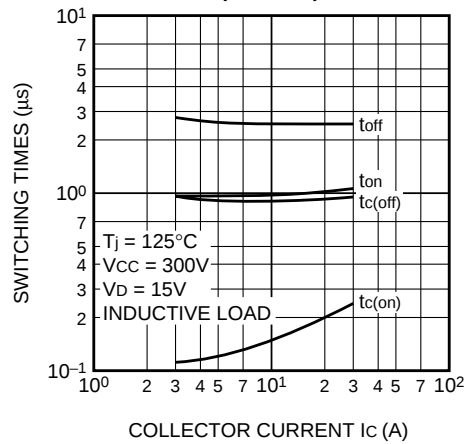
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



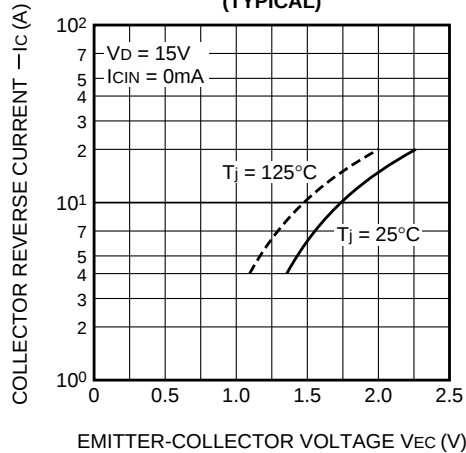
COLLECTOR-EMITTER SATURATION
VOLTAGE VS. SUPPLY VOLTAGE
(TYPICAL)



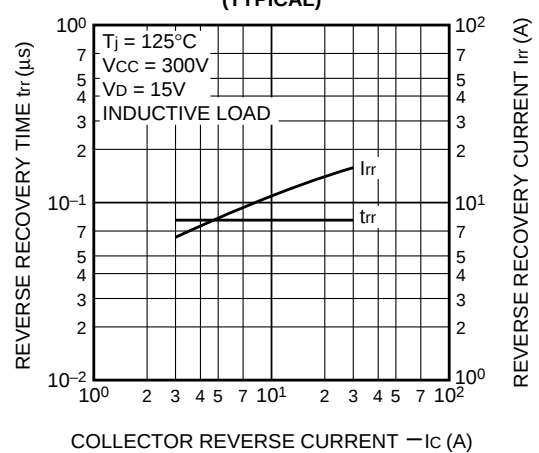
SWITCHING TIME VS.
COLLECTOR CURRENT
(TYPICAL)



FREE-WHEEL DIODE FORWARD
CHARACTERISTICS
(TYPICAL)



REVERSE RECOVERY CHARACTERISTICS
OF FREE-WHEEL DIODE
(TYPICAL)



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FLAT-BASE TYPE
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