Solitron Devices, Inc.

SDIM14C60AF

14 A 600 V 3 Phase Inverter Six Pack

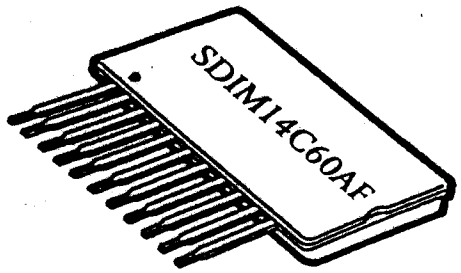
FEATURES:

- 7A @ 110°C and 600 Volts
- UFS Series IGBT
  - High Speed t_{fi} = 11.5 ns typical
  - Low Vcesat - 1.6 volts
- Low Profile SIP Six Pack
- Isolated Heat Sink
- Ultrafast Soft Recovery Diode

DESCRIPTION:

The SDIM14C60AF is a 14 A 600 V IGBT Power Module. The circuit includes a full 3 phase inverter for use in fractional HP Motor Drive Systems.

PACKAGE:



Package Designation A

Absolute Maximum Ratings Tc = 25°C, Unless Otherwise Specified

	Symbol	Value	Units
Collector Emitter Voltage	BV_{CES}	600	V
Gate Emitter Voltage	V_{GES}	± 20	V
Collector Current			
Continuous	I_C	14	A
1 ms	I_{CM}	56	A
Collector Current @ 110°C			
Continuous	I_{C110}	7	A
1 ms	I_{CM}		A
Diode Forward Current			
Continuous	I_F	7	A
1 ms	I_{FM}		A
Diode Forward Current @ 100°C			
Continuous	I_F		A
1 ms	I_{FM}		A
Collector Power Dissipation @ 25°C	P_C		W
Junction and Storage Temperature	T_J, T_{STG}	-55 to 150	°C
Isolation Voltage	V_{ISO}	2500	VAC
Short Circuit Withstand Time (Note 1) at V_{GE} = 15 V	t_{SC}	1	µs
Short Circuit Withstand Time (Note 1) at V_{GE} = 10 V	t_{SC}	8	µs

Note: 1. $V_{CE(PK)}$ = 360 V, T_J = 125°C, R_{GE} = 50 Ω

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Electrical Specifications T_C = 25°C Unless otherwise specified

Parameters	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector Emitter Breakdown Voltage	BV_{CES}	I_C = 250 µA, V_{GE} = 0 V	600	—	—	V
Collector Emitter Leakage Current	I_{CES}	V_{CE} = BV_{CES}, V_{GE} = 0	—	—	250	µA
Collector Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C = 7 A, V_{GE} = 15 V	—	1.6	2.2	V
Gate Emitter Threshold Voltage	$V_{GE(TH)}$	I_C = 250µA, V_{CE} = V_{GE}	3.0	5.0	6.0	V
Gate Emitter Leakage Current	I_{GES}	V_{GE} = ± 20 V, V_{CE} = 0 V	—	—	±250	nA
On State Gate Charge	$Q_{G(ON)}$	I_C = 7 A, V_{CE} = 300 V, V_{GE} = 15 V	—	23	30	nC
Input Capacitance	C_{IES}	V_{CE} = 20 V, V_{GE} = 0 V, f = 1 MHz	—	900	—	pF
Output Capacitance	C_{OES}	V_{CE} = 20 V, V_{GE} = 0 V, f = 1 MHz	—	70	—	pF
Reverse Transfer Capacitance	C_{RTC}	V_{CE} = 20 V, V_{GE}= 0 V, f = 1 MHz	—	20	—	pF
Transconductance	g_{fs}	V_{CE} = 20 V, I_C=7 A	—	—	—	S
Diode Forward Voltage Drop	V_F	I_F= 7 A	—	1.9	—	V
SWITCHING SPECIFICATIONS						
Current Turn On Delay	$t_{d(ON)}$	I_C = 7 A V_{GE} = 15 V $V_{CE\ (PK)}$ =480 V T_J= 150°C R_G = 50 Ω L = 1 mH	—	8.5	—	ns
Current Rise Time	t_{ri}		—	11.5	—	ns
Turn On Time	T_{ON}		—	20	—	ns
Current Turn Off Delay Time	$t_{d(OFF)}$		—	350	400	ns
Current Fall Time	t_{fi}		—	140	275	ns
Turn Off Time	T_{OFF}		—	500	—	ns
Turn On Energy	E_{ON}		—	165	—	µJ
Turn Off Energy	E_{OFF}		—	600	—	µJ
Diode Reverse Recovery Time	t_{rr}	If = 1 A, di(If)/dt = 200 A/µs	—	35	—	ns
Diode Reverse Recovery Time	t_{rr}	If = 7 A, di(If)/dt = 200 A/µs	—	30	—	ns
Thermal Resistance IGBT	$R_{\theta JC}$		—	4.0	—	°C/W
Thermal Resistance Diode	$R_{\theta JC}$		—	6.0	—	°C/W

Circuit Configuration (F) and Pin Out