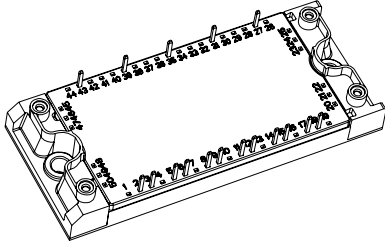


## IGBT Sixpack Module, 13 A


**ECONO2 6PACK**


PRODUCT SUMMARY	
$V_{CES}$	1200 V
$V_{CE(on)}$ (typical)	2.64 V
$t_{sc}$ at $T_J = 150\text{ }^\circ\text{C}$	> 10 $\mu\text{s}$
$I_C$ at $T_C = 80\text{ }^\circ\text{C}$	13 A

### FEATURES

- Low diode  $V_F$
- 10  $\mu\text{s}$  short circuit capability
- Square RBSOA
- Low  $V_{CE(on)}$  non punch through IGBT technology
- HEXFRED® antiparallel diode with ultrasoft reverse recovery characteristics
- Positive  $V_{CE(on)}$  temperature coefficient
- Ceramic DBC substrate
- Low stray inductance design
- Speed 8 to 60 kHz
- Totally lead (Pb)-free
- Designed and qualified for industrial market


**RoHS**  
COMPLIANT

### BENEFITS

- Benchmark efficiency for motor control
- Rugged transient performance
- Low EMI, requires less snubbing
- Direct mounting to heatsink
- PCB solderable terminals
- Low junction to case thermal resistance
- UL approved E78996 

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	MAX.	UNITS
Collector to emitter voltage	$V_{CES}$		1200	V
Continuous collector current	$I_C$	$T_C = 25\text{ }^\circ\text{C}$	20	A
		$T_C = 80\text{ }^\circ\text{C}$	13	
Pulsed collector current See fig. C.T.5	$I_{CM}$		40	
Clamped inductive load current	$I_{LM}$		40	
Diode continuous forward current	$I_F$	$T_C = 25\text{ }^\circ\text{C}$	20	
		$T_C = 80\text{ }^\circ\text{C}$	12	
Pulsed diode maximum forward current	$I_{FM}$		40	
Gate to emitter voltage	$V_{GE}$		$\pm 20$	V
Maximum power dissipation (IGBT and diode)	$P_D$	$T_C = 25\text{ }^\circ\text{C}$	151	W
		$T_C = 80\text{ }^\circ\text{C}$	85	
Maximum operating junction temperature	$T_J$		150	$^\circ\text{C}$
Storage temperature range	$T_{Stg}$		- 40 to + 125	
Isolation voltage	$V_{ISOL}$		AC 2500 (minimum)	V



<b>ELECTRICAL SPECIFICATIONS</b> ( $T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Collector to emitter breakdown voltage	$BV_{(CES)}$	$V_{GE} = 0\text{ V}, I_C = 500\text{ }\mu\text{A}$	1200	-	-	V
Temperature coefficient of breakdown voltage	$\Delta V_{(BR)CES}/\Delta T_J$	$V_{GE} = 0\text{ V}, I_C = 1\text{ mA}$ (25 °C to 125 °C)	-	0.87	-	V/°C
Collector to emitter voltage	$V_{CE(ON)}$	$I_C = 10\text{ A}, V_{GE} = 15\text{ V}$	-	2.64	2.85	V
		$I_C = 20\text{ A}, V_{GE} = 15\text{ V}$	-	3.59	3.94	
		$I_C = 10\text{ A}, V_{GE} = 15\text{ V}, T_J = 125\text{ }^\circ\text{C}$	-	3.17	3.46	
		$I_C = 20\text{ A}, V_{GE} = 15\text{ V}, T_J = 125\text{ }^\circ\text{C}$	-	4.48	4.97	
Gate threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C = 250\text{ }\mu\text{A}$	4	-	6	
Threshold voltage temperature coefficient	$\Delta V_{GE(th)}/\Delta T_J$	$V_{CE} = V_{GE}, I_C = 1\text{ mA}$ (25 °C to 125 °C)	-	-10.4	-	mV/°C
Zero gate voltage collector current	$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = 1200\text{ V}$	-	-	100	$\mu\text{A}$
		$V_{GE} = 0\text{ V}, V_{CE} = 1200\text{ V}, T_J = 125\text{ }^\circ\text{C}$	-	750	-	
Diode forward voltage drop	$V_{FM}$	$I_F = 10\text{ A}$	-	2.00	2.28	V
		$I_F = 20\text{ A}$	-	2.48	2.90	
		$I_F = 10\text{ A}, T_J = 125\text{ }^\circ\text{C}$	-	2.16	2.51	
		$I_F = 20\text{ A}, T_J = 125\text{ }^\circ\text{C}$	-	2.87	3.42	
Gate to emitter leakage current	$I_{GES}$	$V_{GE} = \pm 20\text{ V}$	-	-	$\pm 200$	nA

<b>THERMAL AND MECHANICAL SPECIFICATIONS</b>					
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS
Junction to case IGBT	$R_{thJC}$	-	-	1.42	°C/W
Junction to case diode		-	-	1.97	
Case to sink, flat, greased surface	$R_{thCS}$	-	0.05	-	
Mounting torque (M5)		2.7	-	3.3	Nm
Weight		-	170	-	g