

# GATE-DRIVE HYBRIDS FOR IGBTs

## DESCRIPTION:

The insulated gate bipolar transistor (IGBT) is increasingly being used in low-noise, high-performance power supplies, inverters, uninterruptible power supplies (UPS), and motor speed controls.

Fuji's Hybrid IC driver of IGBTs was developed to take full advantage of the IGBT device.

## APPLICATIONS:

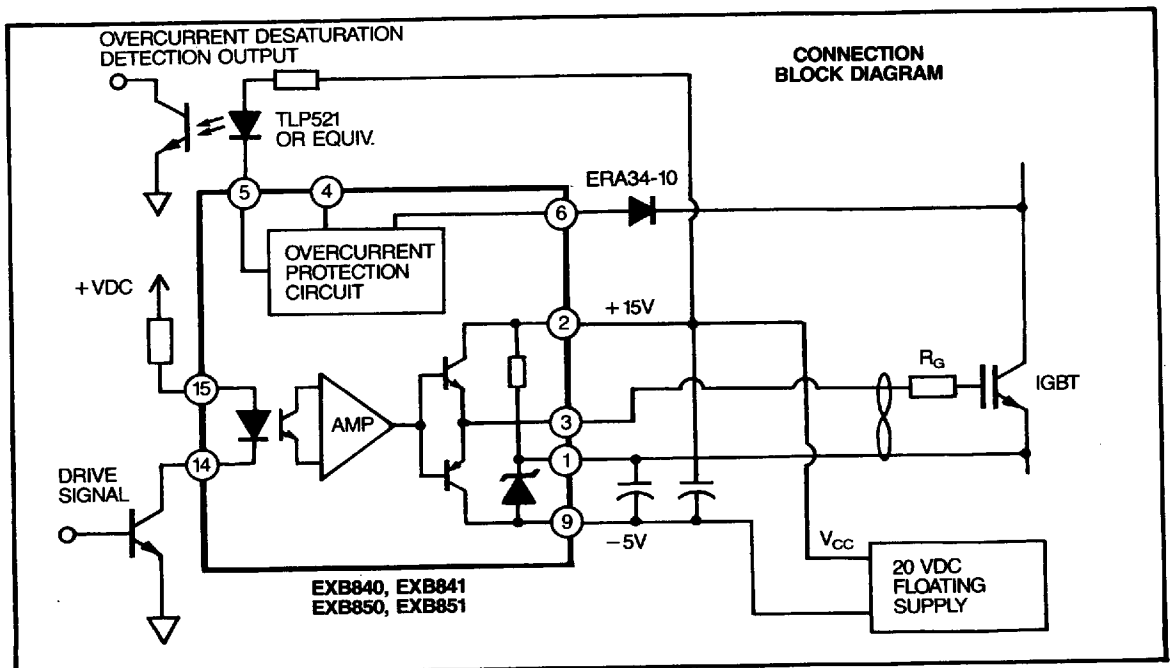
- General-purpose inverter and motor controls
- Servo controllers
- Uninterruptible power supplies (UPS)
- Welding machines
- Laser, microwave, plasma and ion generators

## FEATURES:

- Two series available:
  - Standard series: for up to 10kHz operation
  - High-speed series: for up to 40kHz operation

*Both series cover Fuji's full range of IGBT products*
- Built-in photocoupler for high isolation voltage: 2500VAC for one minute
- Single-supply operation
- Built-in overcurrent protection circuit
- Overcurrent detection output
- SIL package for high-density mounting

**EXB840**  
**EXB841**  
**EXB850**  
**EXB851**



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## RATINGS AND CHARACTERISTICS

**Absolute Maximum Ratings at  $T_C = 25^\circ\text{C}$  (Unless Otherwise Specified)**

Parameter	Symbols	Conditions	Ratings		Unit
			EXB850, EXB840 (Medium Capacity)	EXB851, EXB841 (Large Capacity)	
Supply Voltage	$V_{CC}$		25		V
Photocoupler Input Current	$I_{IN}$		10		mA
Forward Bias Output Current	$I_{G1}$	$P_W = 2 \mu\text{s}$ , duty at 0.05 or less	1.5	4.0	A
Reverse Bias Output Current	$I_{G2}$	$P_W = 2 \mu\text{s}$ , duty at 0.05 or less	1.5	4.0	A
Input/Output Isolation Voltage	$V_{ISO}$	AC 50/60 Hz, 1 minute	2500		V
Operating Surface Temperature	$T_C$		-10 to +85		$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-25 to +125		$^\circ\text{C}$

### Recommended Operating Conditions

Parameter	Symbols	Recommended Operating Conditions				Unit
		Standard Types		High-Speed Types		
		EXB850	EXB851	EXB840	EXB841	
Supply Voltage	$V_{CC}$	20 $\pm$ 1				V
Photocoupler Input Current	$I_{IN}$	5		10		mA

### Electrical Characteristics at $T_C = 25^\circ\text{C}$ (Unless Otherwise Specified)

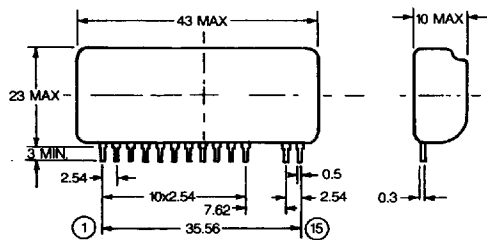
Parameter	Symbols	Conditions	Ratings						Unit
			EXB840, EXB841 (High Speed)			EXB850, EXB851 (Medium Speed)			
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Turn-on Time	$t_{on}$	$V_{CC} = 20\text{V}$ , $I_F = 5\text{mA}$			1.5			2.0	$\mu\text{sec}$
Turn-off Time	$t_{off}$	$V_{CC} = 20\text{V}$ , $I_F = 5\text{mA}$			1.5			4.0	$\mu\text{sec}$
Overcurrent Protection Voltage	$V_{ocp}$	$V_{CC} = 20\text{V}$ , $I_F = 5\text{mA}$			7.5			7.5	V
Overcurrent Protection Delay	$t_{ocp}$	$V_{CC} = 20\text{V}$ , $I_F = 5\text{mA}$			10			10	$\mu\text{sec}$
Alarm Delay	$t_{ALM}$	$V_{CC} = 20\text{V}$ , $I_F = 5\text{mA}$			1			1	$\mu\text{sec}$
Reverse Bias Supply Voltage	$V_{RB}$	$V_{CC} = 20\text{V}$			5			5	V
Common Mode Transient Immunity	$dv/dt$				5k			5k	V/ $\mu\text{s}$

## COMPREHENSIVE CHART

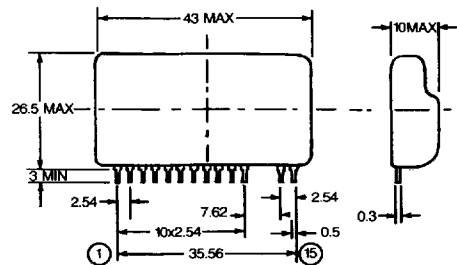
IGBT	600V IGBT Drive		1200V IGBT Drive	
	Up to 150A	Up to 400A	Up to 75A	Up to 300A
Standard Type	EXB850	EXB851	EXB850	EXB851
High-Speed Type	EXB840	EXB841	EXB840	EXB841

## OUTLINE DRAWINGS

DIMENSIONS IN MILLIMETERS



EXB850  
EXB840



EXB851  
EXB841

Application Books for IGBT (REH214) and Gate Drive (REH219) are available for complete information.