

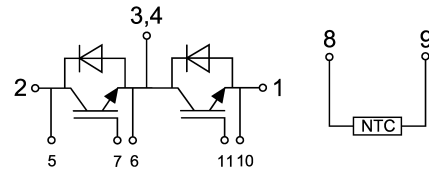
$V_{CES} = 1200V$
$I_C = 150A$ at $T_C = 80^\circ C$
$t_{SC} \geq 10\mu sec$
$V_{CE(ON)} = 1.90V$ at $I_C = 150A$

**IGBT Half-Bridge  
POWIR ECO 3+™ Package**



**Applications:**

- Industrial Motor Drive
- Uninterruptible Power Supply
- Welding and Cutting Machine
- Switched Mode Power Supply
- Induction Heating



Features	Benefits
Low $V_{CE(ON)}$ and Switching Losses	High Efficiency in a Wide Range of Applications
RBSOA Tested	Rugged Transient Performance
10μsec Short Circuit Safe Operating Area	
<b>POWIR ECO 3+™</b> Package	Industry Standard
Lead Free	RoHS Compliant, Environmental Friendly

Base Part Number	Package Type	Standard Pack	Quantity	Orderable Part Number
IRG7T150HF12J	<b>POWIR ECO 3+™</b>	Box	80	RG7T150HF12J

**Absolute Maximum Ratings of IGBT**

$V_{CES}$	Collector to Emitter Voltage	1200	V
$V_{GES}$	Continuous Gate to Emitter Voltage	±20	V
$I_C$	Continuous Collector Current	$T_C = 80^\circ C$	150 A
		$T_C = 25^\circ C$	300 A
$I_{CM}$	Pulse Collector Current	$T_J = 175^\circ C$	300 A
$P_D$	Maximum Power Dissipation (IGBT)	$T_C = 25^\circ C, T_J = 175^\circ C$	1000 W
$T_J$	Maximum IGBT Junction Temperature	175	°C
$T_{JOP}$	Maximum Operating Junction Temperature Range	-40 to +150	°C
$T_{stg}$	Storage Temperature	-40 to +125	°C

**Electrical Characteristics of IGBT at  $T_J = 25^\circ\text{C}$  (Unless Otherwise Specified)**

Parameter		Min.	Typ.	Max.	Unit	Test Conditions	
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	1200			V	$V_{GE} = 0V, I_C = 2mA$	
$V_{GE(th)}$	Gate Threshold Voltage	5.0	5.8	6.5	V	$I_C = 7.2mA, V_{CE} = V_{GE}$	
$V_{CE(ON)}$	Collector to Emitter Saturation Voltage		1.90	2.20	V	$T_J = 25^\circ\text{C}$	$I_C = 150A, V_{GE} = 15V$
			2.20		V	$T_J = 125^\circ\text{C}$	
$I_{CES}$	Collector to Emitter Leakage Current			2	mA	$V_{GE} = 0V, V_{CE} = V_{CES}$	
$I_{GES}$	Gate to Emitter Leakage Current			400	nA	$V_{GE} = \pm 20V, V_{CE} = 0$	
$R_{Gint}$	Internal Gate Resistance		1.57		$\Omega$		

**Switching Characteristics of IGBT**

Parameter		Min.	Typ.	Max.	Unit	Test Conditions	
$t_{d(on)}$	Turn-on Delay Time		480		ns	$T_J = 25^\circ\text{C}$	$V_{CC}=600V, I_C = 150A, R_G = 15\Omega, V_{GE}=\pm 15V, \text{Inductive Load}$
			460			$T_J = 125^\circ\text{C}$	
$t_r$	Rise Time		190		ns	$T_J = 25^\circ\text{C}$	
			190			$T_J = 125^\circ\text{C}$	
$t_{d(off)}$	Turn-off Delay Time		470		ns	$T_J = 25^\circ\text{C}$	
			490			$T_J = 125^\circ\text{C}$	
$t_f$	Fall Time		180		ns	$T_J = 25^\circ\text{C}$	
			260			$T_J = 125^\circ\text{C}$	
$E_{on}$	Turn-on Switching Loss		11.1		mJ	$T_J = 25^\circ\text{C}$	
			13.4			$T_J = 125^\circ\text{C}$	
$E_{off}$	Turn-off Switching Loss		6.7		mJ	$T_J = 25^\circ\text{C}$	
			10.6			$T_J = 125^\circ\text{C}$	
$Q_g$	Total Gate Charge		1100		nC	$T_J = 25^\circ\text{C}$	
$C_{ies}$	Input Capacitance		17.3		nF	$V_{CE} = 25V, V_{GE} = 0V, f = 1MHz, T_J = 25^\circ\text{C}$	
$C_{oes}$	Output Capacitance		1.35				
$C_{res}$	Reverse Transfer Capacitance		0.80				
RBSOA	Reverse Bias Safe Operating Area	Trapezoid				$I_C = 300A, V_{CC} = 960V, V_P = 1200V, R_G = 15\Omega, V_{GE} = +15V \text{ to } 0V, T_J = 150^\circ\text{C}$	
SCSOA	Short Circuit Safe Operating Area	10			$\mu s$	$V_{CC} = 600V, V_{GE} = 15V, T_J = 150^\circ\text{C}$	