

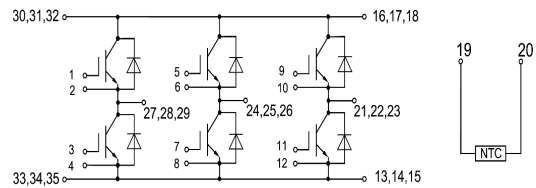
$V_{CES} = 1200V$
$I_C = 100A$ at $T_C = 80^\circ C$
$t_{SC} \geq 10\mu sec$
$V_{CE(ON)} = 1.90V$ at $I_C = 100A$

IGBT Six-Pack
POWER ECO 3™ Package



Applications:

- Industrial Motor Drive
- Servo drive
- Uninterruptible Power Supply
- AC Inverter Drive



Features	Benefits
Low $V_{CE(ON)}$ and Switching Losses	High Efficiency in a Wide Range of Applications
100% RBSOA Tested	Rugged Transient Performance
10μsec Short Circuit Safe Operating Area	
POWER ECO 3™ Package	Industry Standard
Lead Free	RoHS Compliant, Environmental Friendly

Base Part Number	Package Type	Standard Pack	Quantity	Orderable Part Number
IRG7T100FF12F	POWER ECO 3™	Box	40	IRG7T100FF12F

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	$T_C = 80^\circ C$	100 A
		$T_C = 25^\circ C$	200 A
I_{CM}	Pulse Collector Current	$T_J = 175^\circ C$	200 A
P_D	Maximum Power Dissipation (IGBT)	$T_C = 25^\circ C, T_J = 175^\circ C$	575 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 to Emitter Breakdown Voltage	1200			V	$V_{GE} = 0V, I_C = 1mA$	
$V_{GE(th)}$	Gate Threshold Voltage	5.0	5.8	6.5	V	$I_C = 5mA, V_{CE} = V_{GE}$	
$V_{CE(ON)}$	Collector to Emitter Saturation Voltage		1.90	2.20	V	$T_J = 25^\circ\text{C}$	$I_C = 100A, V_{GE} = 15V$
			2.20		V	$T_J = 125^\circ\text{C}$	
I_{CES}	Collector to Emitter Leakage Current			1	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		2.5		Ω		

Switching Characteristics of IGBT

Parameter		Min.	Typ.	Max.	Unit	Test Conditions	
$t_{d(on)}$	Turn-on Delay Time		245		ns	$T_J = 25^\circ\text{C}$	$V_{CC} = 600V, I_C = 100A, R_G = 15\Omega, V_{GE} = \pm 15V, \text{Inductive Load}$
			225			$T_J = 125^\circ\text{C}$	
t_r	Rise Time		145		ns	$T_J = 25^\circ\text{C}$	
			145			$T_J = 125^\circ\text{C}$	
$t_{d(off)}$	Turn-off Delay Time		420		ns	$T_J = 25^\circ\text{C}$	
			450			$T_J = 125^\circ\text{C}$	
t_f	Fall Time		170		ns	$T_J = 25^\circ\text{C}$	
			230			$T_J = 125^\circ\text{C}$	
E_{on}	Turn-on Switching Loss		9.1		mJ	$T_J = 25^\circ\text{C}$	
			11.7			$T_J = 125^\circ\text{C}$	
E_{off}	Turn-off Switching Loss		5.5		mJ	$T_J = 25^\circ\text{C}$	
			7.9			$T_J = 125^\circ\text{C}$	
Q_g	Total Gate Charge		945		nC	$T_J = 25^\circ\text{C}$	
C_{ies}	Input Capacitance		13.70		nF	$V_{CE} = 25V, V_{GE} = 0V, f = 1MHz, T_J = 25^\circ\text{C}$	
C_{oes}	Output Capacitance		0.78				
C_{res}	Reverse Transfer Capacitance		0.47				
RBSOA	Reverse Bias Safe Operating Area	Trapezoid				$I_C = 200A, V_{CC} = 960V, V_P = 1200V, R_G = 15\Omega, V_{GE} = +15V \text{ to } 0V, T_J = 150^\circ\text{C}$	
SCSOA	Short Circuit Safe Operating Area	10			μs	$V_{CC} = 600V, V_{GE} = 15V, T_J = 150^\circ\text{C}$	