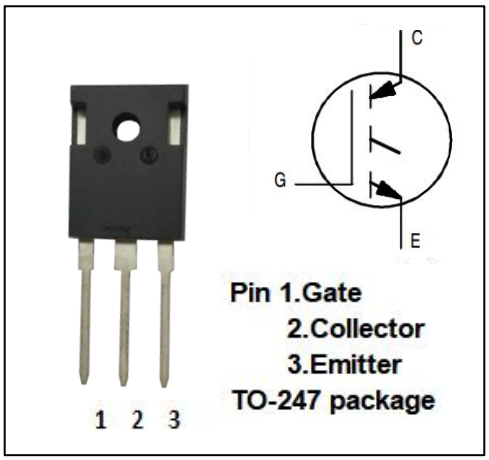
IRG4PH50U

Ultra Fast Speed IGBT

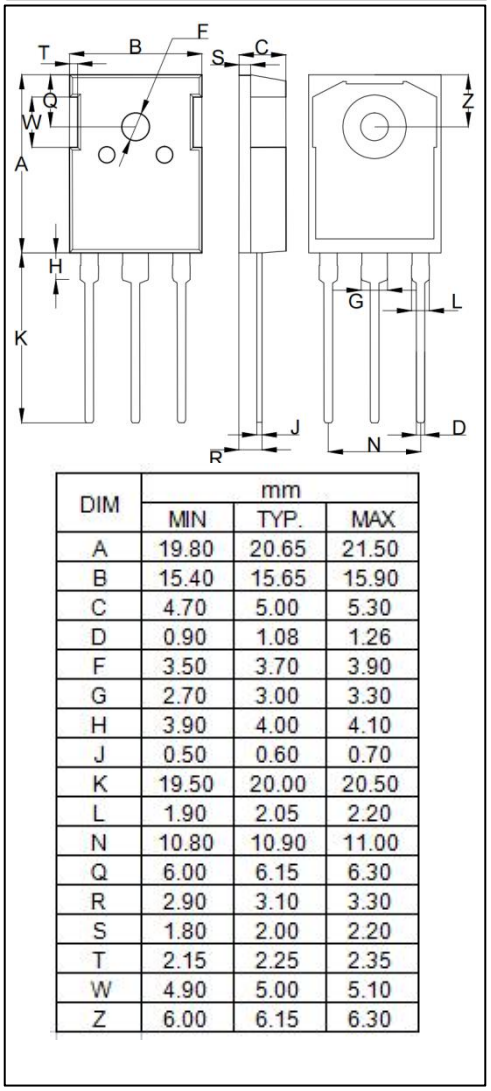
FEATURES

- Ultrafast Optimizes for high operating frequencies
- High Current Capability
- High Input Impedance
- Fast Switching



APPLICATIONS

- Highest efficiency available
- Optimaized for power conversion;UPS,SMPS and welding



DIM	mm		
	MIN	TYP.	MAX
A	19.80	20.65	21.50
B	15.40	15.65	15.90
C	4.70	5.00	5.30
D	0.90	1.08	1.26
F	3.50	3.70	3.90
G	2.70	3.00	3.30
H	3.90	4.00	4.10
J	0.50	0.60	0.70
K	19.50	20.00	20.50
L	1.90	2.05	2.20
N	10.80	10.90	11.00
Q	6.00	6.15	6.30
R	2.90	3.10	3.30
S	1.80	2.00	2.20
T	2.15	2.25	2.35
W	4.90	5.00	5.10
Z	6.00	6.15	6.30

ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	VALUE	UNIT
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate-Emitter Voltage	±20	V
I_C	Collector Current-Continuous @ T_C=25℃	45	A
I_C	Collector Current-Continuous @ T_C=100℃	24	A
I_{CM}	Pulsed Collector Current	180	A
P_D	Power Dissipation , TC=25℃	200	W
P_D	Power Dissipation , TC=100℃	78	W
T_j	Max. Operating Junction Temperature	150	℃
T_{stg}	Storage Temperature Range	-55~150	℃

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ J\text{-}C}$	Thermal Resistance,Junction to Case	0.64	℃/W
$R_{th\ J\text{-}A}$	Thermal Resistance,Junction to Ambient	40	℃/W

ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN	TYPE	MAX	UNIT
V_{CES}	Collector-Emitter Breakdown Voltage	V_{GE}=0; I_C= 0.25mA	1200	--	--	V
$V_{GE(TH)}$	Gate-Emitter Threshold Voltage	V_{GE}= V_{CE}; I_C= 0.25mA	3.0	--	6.0	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C= 20A; V_{CE}= 15V, T_C=25℃	--	2.57	3.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C= 24A; V_{CE}= 15V, T_C=25℃	--	2.79	3.7	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C= 45A; V_{CE}= 15V, T_C=25℃	--	3.25	--	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C= 24A; V_{CE}= 15V, T_C=150℃	--	2.55	--	V
I_{CES}	Zero Gate Voltage Collector Current	V_{CE}=1200V; V_{GE}=0	--	--	250	uA
I_{GES}	Gate-Emitter Leakage Current	V_{GE}=±20V; V_{CE}=0	--	--	±100	nA
g_{ts}	Forward Transconductance	I_C= 24A; V_{CE}= 100V	23	35	--	S
C_{ies}	Input Capacitance	V_{GE} = 0V, V_{CC} = 30V, f = 1.0MHz	--	3650	--	pF
C_{oes}	Output Capacitance		--	170	--	
C_{res}	Reverse Transfer Capacitance		--	33	--	
Q_g	Total Gate Charge	V_{GE} = 15V, I_C= 24A, V_{CC} = 400V	--	165	250	nC
Q_{gs}	Gate-Source Charge		--	28	40	
Q_{gd}	Gate-Drain Charge		--	55	83	

SYMBOL	PARAMETER	CONDITIONS	MIN	TYPE	MAX	UNIT
$t_{d(on)}$	Turn-on Delay Time	V_{GE} = 15V, I_C= 24A, V_{CC}= 960V , R_G=5.0Ω T_J=25℃	--	36	--	ns
t_r	Turn-on Rise Time		--	16	--	ns
E_{on}	Turn-on switching losses		--	0.55	--	mJ
$t_{d(off)}$	Turn-off Delay Time		--	205	350	ns
t_f	Turn-off Fall Time		--	300	500	ns
E_{off}	Turn-off switching losses		--	1.50	--	mJ
$t_{d(on)}$	Turn-on Delay Time	V_{GE} = 15V, I_C= 24A, V_{CC}= 960V , R_G=5.0Ω T_J=150℃	--	33	--	ns
t_r	Turn-on Rise Time		--	20	--	ns
E_{on}	Turn-on switching losses		--	0.40	--	mJ
$t_{d(off)}$	Turn-off Delay Time		--	330	--	ns
t_f	Turn-off Fall Time		--	290	--	ns
E_{off}	Turn-off switching losses		--	1.52	--	mJ

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