

Features

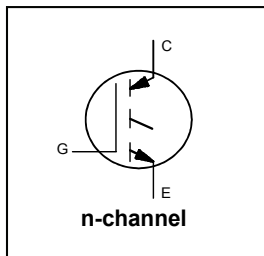
- Low $V_{CE(on)}$ Planar IGBT Technology
- Low Switching Losses
- Square RBSOA
- 100% of the Parts Tested for ILM
- Positive $V_{CE(on)}$ Temperature Coefficient
- Reflow Capable per JDS22-A113
- Lead-Free, RoHS Compliant
- Automotive Qualified *

Benefits

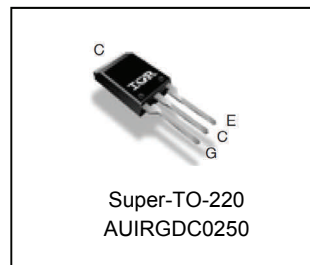
- Device optimized for soft switching applications
- High Efficiency due to Low $V_{CE(on)}$, low switching losses
- Rugged transient performance for increased reliability
- Excellent current sharing in parallel operation
- Low EMI

Application

- PTC Heater
- Relay Replacement



$V_{CES} = 1200V$
 $I_C = 81A @ T_C = 100^{\circ}C$
 $V_{CE(on)} \text{ typ.} = 1.47V @ 33A$



G	C	E
Gate	Collector	Emitter

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
AUIRGDC0250	Super-TO-220	Tube	50	AUIRGDC0250

Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature (T_A) is $25^{\circ}C$, unless otherwise specified.

	Parameter	Max.	Units
V_{CES}	Collector-to-Emitter Voltage	1200	V
$I_C @ T_C = 25^{\circ}C$	Continuous Collector Current	141 ^④	A
$I_C @ T_C = 100^{\circ}C$	Continuous Collector Current	81	
I_{CM}	Pulse Collector Current, $V_{GE} = 15V$ ^②	99	
I_{LM}	Clamped Inductive Load Current, $V_{GE} = 20V$ ^①	99	V
V_{GE}	Continuous Gate-to-Emitter Voltage	± 20	
	Transient Gate-to-Emitter Voltage	± 30	
$P_D @ T_C = 25^{\circ}C$	Maximum Power Dissipation	543	W
$P_D @ T_C = 100^{\circ}C$	Maximum Power Dissipation	217	
T_J	Operating Junction and	-55 to +150	$^{\circ}C$
T_{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 sec. (Through Hole Mounting)	300 (0.063 in. (1.6mm) from case)	

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$ (IGBT)	Thermal Resistance Junction-to-Case (each IGBT) ^③	—	0.23	$^{\circ}C/W$
$R_{\theta CS}$	Thermal Resistance, Case-to-Sink (flat, greased surface)	0.50	—	
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (typical socket mount)	—	62	

* Qualification standards can be found at www.infineon.com

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)CES}	Collector-to-Emitter Breakdown Voltage	1200	—	—	V	V _{GE} = 0V, I _C = 250μA
ΔV _{(BR)CES} /ΔT _J	Temperature Coeff. of Breakdown Voltage	—	1.2	—	V/°C	V _{GE} = 0V, I _C = 1mA (25°C-150°C)
V _{CE(on)}	Collector-to-Emitter Saturation Voltage	—	1.47	1.8	V	I _C = 33A, V _{GE} = 15V, T _J = 25°C
		—	1.56	—		I _C = 33A, V _{GE} = 15V, T _J = 150°C
V _{GE(th)}	Gate Threshold Voltage	3.0	—	6.0	V	V _{CE} = V _{GE} , I _C = 250μA
ΔV _{GE(th)} /ΔT _J	Threshold Voltage temp. coefficient	—	-15	—	mV/°C	V _{CE} = V _{GE} , I _C = 250μA (25°C-150°C)
g _{fe}	Forward Transconductance	—	30	—	S	V _{CE} = 50V, I _C = 33A, PW = 20μS
I _{CES}	Collector-to-Emitter Leakage Current	—	—	250	μA	V _{GE} = 0V, V _{CE} = 1200V, T _J = 25°C
		—	—	1000		V _{GE} = 0V, V _{CE} = 1200V, T _J = 150°C
I _{GES}	Gate-to-Emitter Leakage Current	—	—	±100	nA	V _{GE} = ±20V

Switching Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
Q _g	Total Gate Charge (turn-on)	—	151	227	nC	I _C = 33A V _{GE} = 15V V _{CC} = 600V
Q _{ge}	Gate-to-Emitter Charge (turn-on)	—	26	39		
Q _{gc}	Gate-to-Collector Charge (turn-on)	—	62	93		
E _{off}	Turn-Off Switching Loss	—	15	16	mJ	I _C = 33A, V _{CC} = 600V, V _{GE} = 15V
t _{d(off)}	Turn-Off delay time	—	485	616	ns	R _G = 5Ω, L = 400μH, T _J = 25°C Energy losses include tail
t _f	Fall time	—	1193	1371		
E _{off}	Turn-Off Switching Loss	—	29	—	mJ	I _C = 33A, V _{CC} = 600V, V _{GE} = 15V
t _{d(off)}	Turn-Off delay time	—	689	—	ns	R _G = 5Ω, L = 400μH, T _J = 150°C Energy losses include tail
t _f	Fall time	—	2462	—		
C _{ies}	Input Capacitance	—	3804	—	pF	V _{GE} = 0V V _{CC} = 30V f = 1.0Mhz
C _{oes}	Output Capacitance	—	161	—		
C _{res}	Reverse Transfer Capacitance	—	31	—		
RBSOA	Reverse Bias Safe Operating Area	FULL SQUARE				T _J = 150°C, I _C = 99A V _{CC} = 960V, V _p ≤ 1200V R _g = 5Ω, V _{GE} = +20V to 0V

Notes:

- ① V_{CC} = 80% (V_{CES}), V_{GE} = 20V, L = 400μH, R_G = 5Ω.
- ② Pulse width limited by max. junction temperature.
- ③ R_θ is measured at T_J approximately 90°C.
- ④ Calculated continuous current based on maximum allowable junction temperature. Bond wire current limit is 78A.
Note that current limitations arising from heating of the device leads may occur with some lead mounting arrangements.