



DESCRIPTION

The AM15T65A is available in TO-220F package.

V _{CES}	I _C	V _{CE}	P _D
650V	15A	1.65V	28W

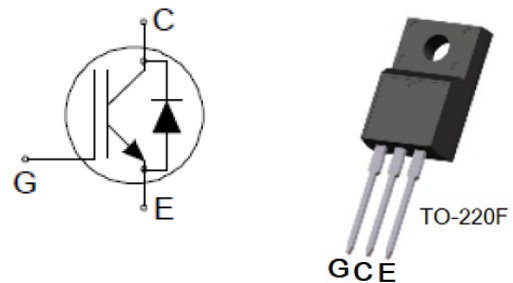
FEATURE

- Fast Switching
- Low V_{CE (sat)}
- Positive temperature coefficient
- Very soft, fast recovery anti-parallel diode

APPLICATION

- UPS
- Air condition
- Motor drives
- PFC

PIN DESCRIPTION



ORDERING INFORMATION

Package Type	Part Number	
TO-220F SPQ: 50pcs/Tube	T3F	AM15T65AT3FU
		AM15T65AT3FVU
Note	U: Tube V: Halogen free Package	
AiT provides all RoHS products		

Pin#	Symbol	Function
1	G	Gate
2	C	Collector
3	E	Emitter

**ABSOLUTE MAXIMUM RATINGS**T_C = 25°C, unless otherwise noted

V _{CES} , Collector-Emitter Voltage		650V
I _C , Collector Current	T _C =25°C	30A
	T _C =100°C	15A
I _{CM} , Pulsed Collector Current* @T _C =25°C		60A
I _F , Diode Continuous Forward Current	T _C =25°C	30A
	T _C =100°C	15A
I _{FM} , Diode Maximum Forward Current @T _C =25°C		60A
V _{GES} , Gate-Emitter Voltage		±30V
P _D , Power Dissipation @T _C =25°C		28W
T _{JMAX} , Operating Junction Temperature Range		+150°C
T _{STG} , Storage Temperature Range		-55°C~+150°C
T _L , Maximum Temperature for Soldering		270°C

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

*Pulse width limited by maximum junction temperature

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ.	Max	Units
Junction-to-Case (IGBT)	R _{θJC}	-	4.4	°C/W
Junction-to-Case (Diode)	R _{θJC}	-	6.5	
Junction-to-Ambient	R _{θJA}	-	62.5	

**ELECTRICAL CHARACTERISTICS**T_c = 25°C, unless otherwise stated.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	V _{CES}	V _{GE} =0V, I _C =-250μA	650	-	-	V
Collector-Emitter Leakage Current	I _{CES}	V _{CE} = 650V, V _{GE} =0V	-	-	4	μA
Gate-Emitter Leakage Current	I _{GES(F)}	V _{GE} =+30V	-	-	200	nA
Gate-Emitter Reverse Leakage	I _{GES(R)}	V _{GE} =-30V	-	-	-200	
ON Characteristics						
Collector-Emitter Saturation Voltage	V _{CE(sat)}	V _{GE} =15V, I _C =15A	-	1.6	2.0	V
Gate Threshold Voltage	V _{GE(TH)}	V _{CE} =V _{GE} , I _C =1mA	4.5	5.2	6.0	
Pulse width tp≤300μs, δ≤2%						
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{CE} =25V, V _{GE} =0V, f=1MHz	-	925	-	pF
Output Capacitance	C _{oss}		-	45	-	
Reverse Transfer Capacitance	C _{rss}		-	9	-	
Total Gate Charge	Q _g	V _{CE} =520V, V _{GE} =15V, I _C =15A	-	39	-	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _C =15A, V _{CE} =400V, V _{GE} =15V, R _G =10Ω, T _J =25°C, Inductive Load	-	13	-	ns
Rise Time	t _r		-	23	-	
Turn-Off Delay Time	t _{d(OFF)}		-	31	-	
Fall Time	t _f		-	85	-	
Turn-On Switching Loss	E _{on}		-	0.32	-	mJ
Turn-Off Switching Loss	E _{off}		-	0.20	-	
Total Switching Loss	E _{ts}		-	0.52	-	
Diode Characteristics						
Diode Forward Voltage	V _F	I _F =15A	-	1.8	2.2	V
Reverse Recovery Time	T _{rr}	I _F =15A,	-	50	-	ns
Reverse Recovery Charge	Q _{rr}	di/dt=200A/us,	-	105	-	nC
Reverse Recovery Current	I _{rrm}	T _J =25°C	-	4.0	-	A



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Forward Bias Safe Operating Area

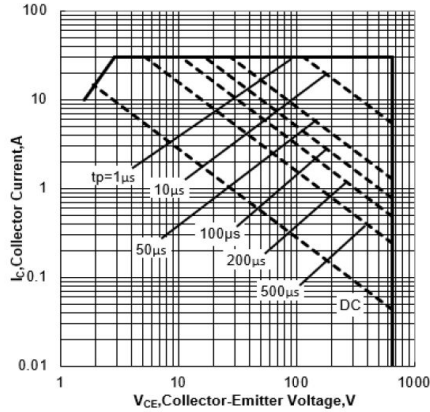


Fig 2. Power Dissipation vs. Case Temperature

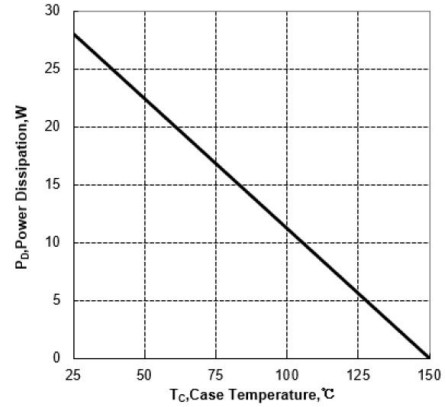


Fig3. Collector Current vs. Case Temperature

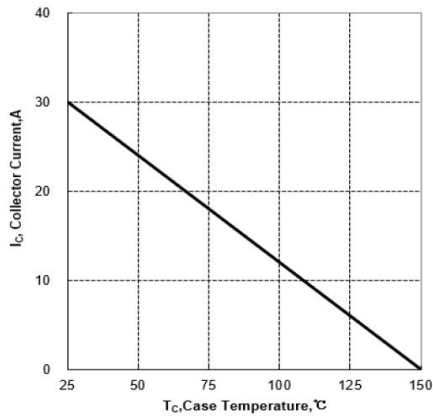


Fig4. Typical Transfer Characteristics

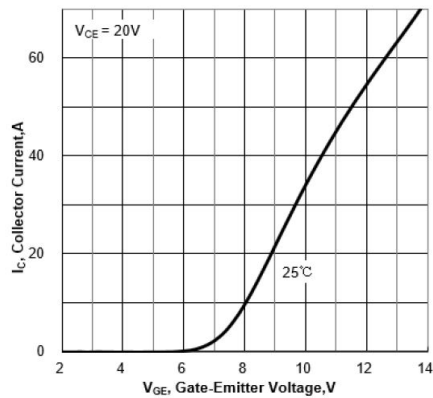


Fig5. Typical Output Characteristics ($T_C = 25^{\circ}$ C)

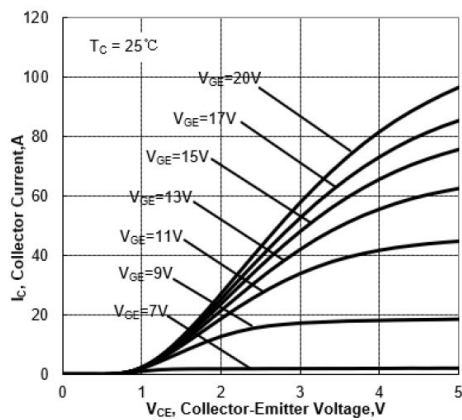


Fig6. Typical Gate Charge

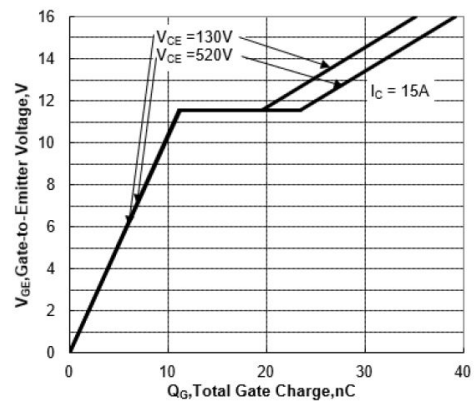




Fig7. Typical Capacitance vs. Collector-Emitter Voltage

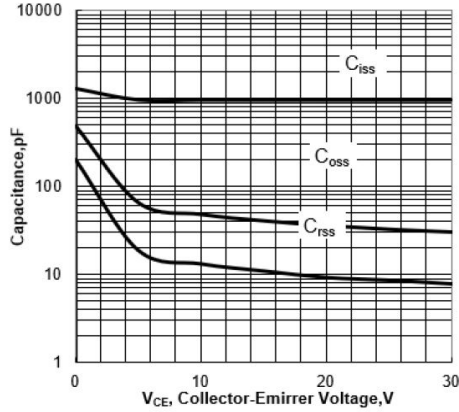


Fig8. IGBT Transient Thermal Impedance vs. Pulse Width

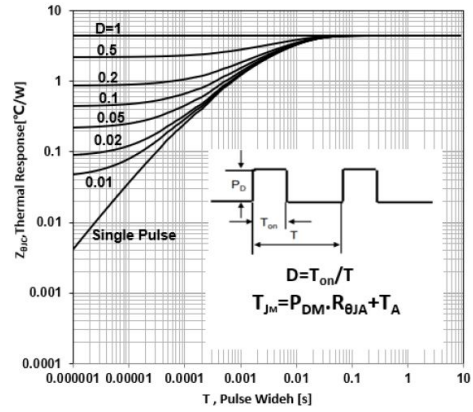


Fig9. Diode Transient Thermal Impedance vs. Pulse Width

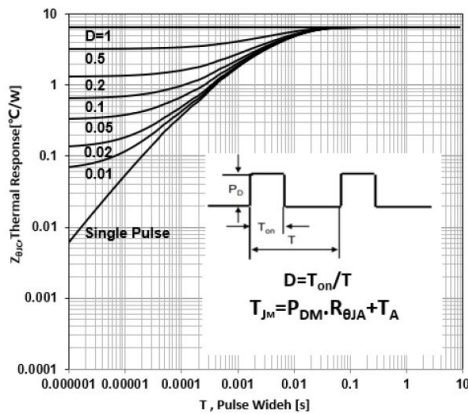


Fig10. Typical Diode Forward Current vs. Forward Voltage

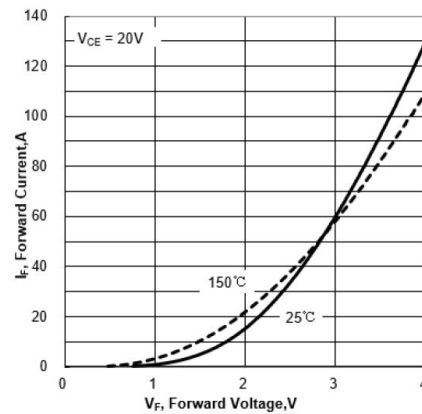


Fig11. Inductive Switching Test Circuit

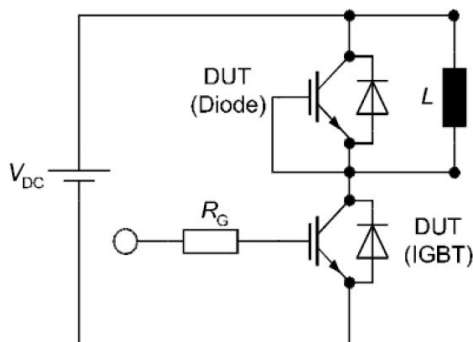


Fig12. Definition of switching times

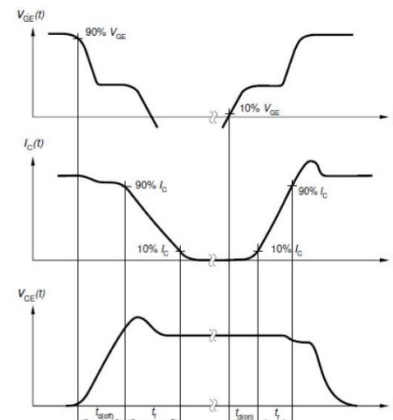




Fig13. Definition of switching losses

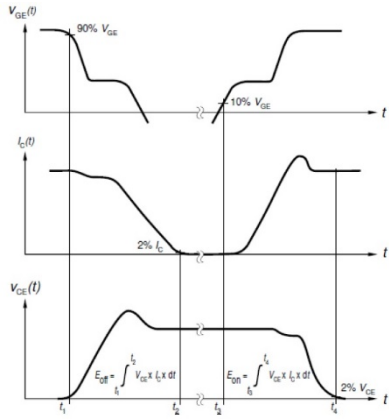
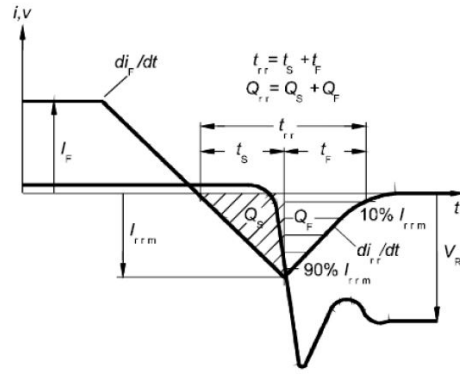


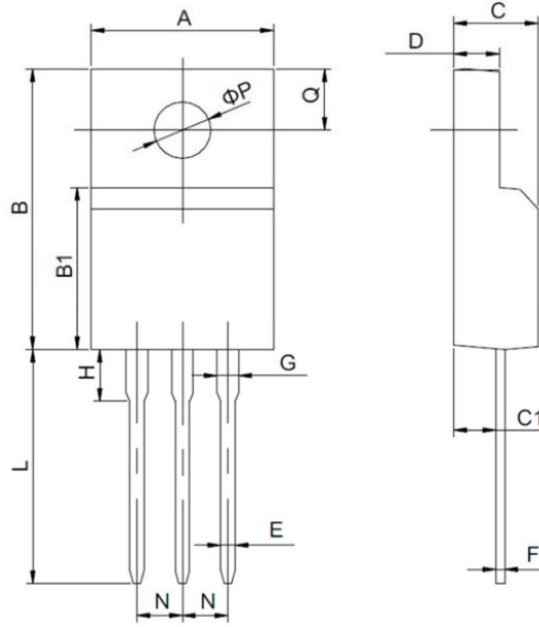
Fig14. Definition of diode switching characteristics





PACKAGE INFORMATION

Dimension in TO-220F (Unit: mm)



Symbol	Min.	Max.
A	9.600	10.400
B	15.400	16.200
B1	8.900	9.500
C	4.300	4.900
C1	2.100	3.000
D	2.400	3.000
E	0.600	1.000
F	0.300	0.600
G	1.120	1.420
H	1.600	3.800
L	12.000	14.000
N	2.340	2.740
Q	3.150	3.550
ΦP	2.900	3.300



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