DESCRIPTION

The AM10T65 is available in TO-252 Packages.

VCES	IC	VCE	PD
650	10A	1.4	83

FEATURE

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

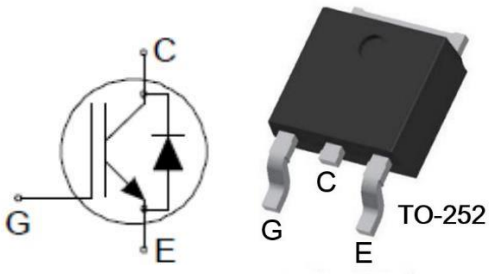
APPLICATION

- UPS
- Air Condition
- Motor Drives
- PFC

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ:2,500pcs /Reel	D	AM10T65DR
		AM10T65DVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

PIN DESCRIPTION



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

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CES}	650	V
Collector Current @ T_C = 25 °C	I_C	30	A
Collector Current @ T_C = 100 °C		10	A
Pulsed Collector Current * @ T_C = 25 °C	I_{CM}	40	A
Diode Continuous Forward Current @ T_C = 25 °C	I_F	20	A
Diode Continuous Forward Current @ T_C = 100 °C		10	A
Diode Maximum Forward Current @ T_C = 25 °C	I_{FM}	30	A
Gate-Emitter Voltage	V_{GES}	±30	V
Power Dissipation @ T_C = 25 °C	P_D	83	W
Operating Junction Temperature Range	T_J	150	℃
Storage Temperature Range	T_{stg}	–55 to 150	℃
Maximum Temperature for Soldering	T_L	260	℃
THERMAL RESISTANCE			
Junction-to-Case (IGBT)	$R_{\theta JC}$	1.5	℃/W
Junction-to-Case (Diode)	$R_{\theta JC}$	2.5	℃/W
Junction-to-Ambient	$R_{\theta JA}$	62	℃/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

*Pulse width limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

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, VGE = 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	nA
ON CHARACTERISTICS						
Collector-Emitter Saturation Voltage	$V_{CE\ (sat)}$	V_{GE} = 15V, I_C = 10A	-	1.4	1.75	V
Gate Threshold Voltage	$V_{GE\ (TH)}$	V_{CE} = V_{GE}, I_C = 1mA	4.5	5.2	5.9	V
Pulse width tp≤300μs, δ≤2%						
Dynamic CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{GE} = 0V V_{CE} = 25V f = 1.0MHz	-	947	-	pF
Output Capacitance	C_{oss}		-	32	-	
Reverse Transfer Capacitance	C_{rss}		-	9	-	
Total Gate Charge	Q_g	IC = 10A V_{CE} = 520V V_{GE} = 15V	-	39	-	nC
Switching CHARACTERISTICS						
Turn-on Delay Time	td(on)	I_C =10A V_{CE} = 400V V_{GE} = 15V R_G =10Ω T=25℃ Inductive Load	-	20	-	ns
Rise Time	tr		-	8	-	
Turn-Off Delay Time	td(off)		-	73	-	
Fall Time	tf		-	65	-	
Turn-On Switching Loss	Eon		-	0.15	-	mJ
Turn-Off Switching Loss	Eoff		-	0.24	-	
Total Switching Loss	Ets		-	0.39	-	
Diode CHARACTERISTICS						
Diode Forward Voltage	V_F	I_F=10A	-	1.8	2.1	V
Reverse Recovery Time	T_{rr}	I_F=10A, di/dt=200A/us,	-	127	-	ns
Reverse Recovery Charge	Q_{rr}		-	286	-	nC
Reverse Recovery Current	I_{rrm}		-	4.4	-	A

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Forward Bias Safe Operating Area

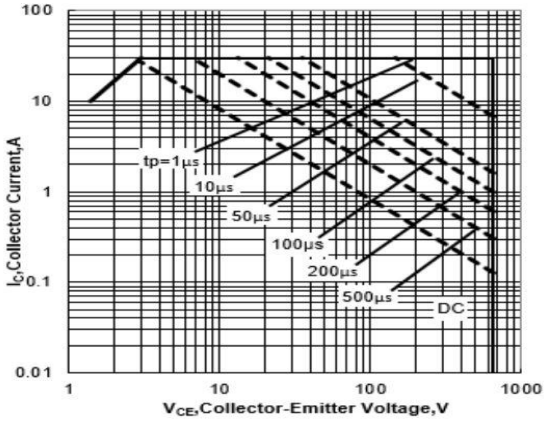


Fig 2. Power Dissipation vs Case Temperature

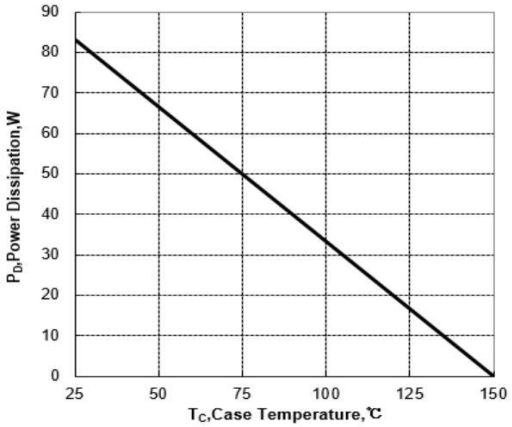


Fig 3. Collector Current vs Case Temperature

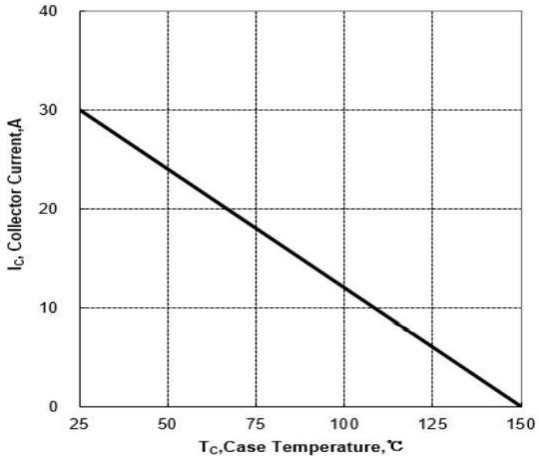


Fig 4. Typical Transfer Characteristics

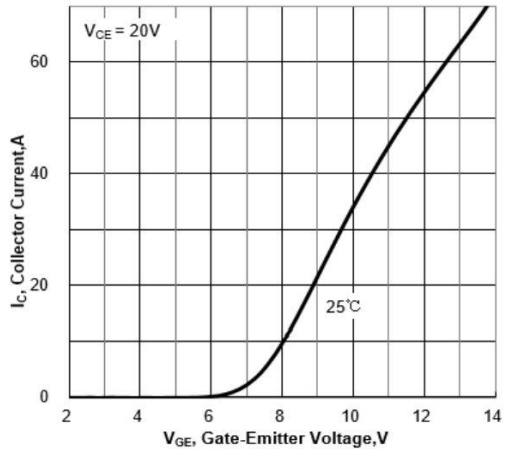


Fig 5. Typical Output Characteristics(T_A=25℃)

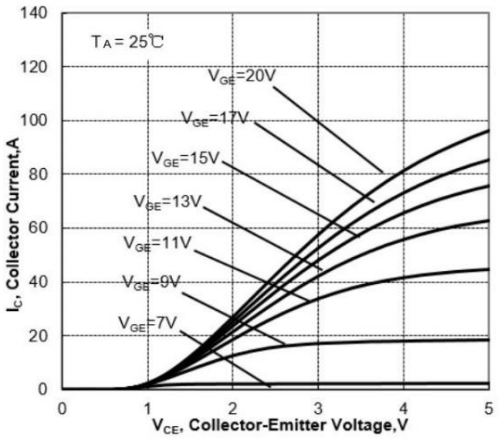


Fig 6. Typical Gate Charge

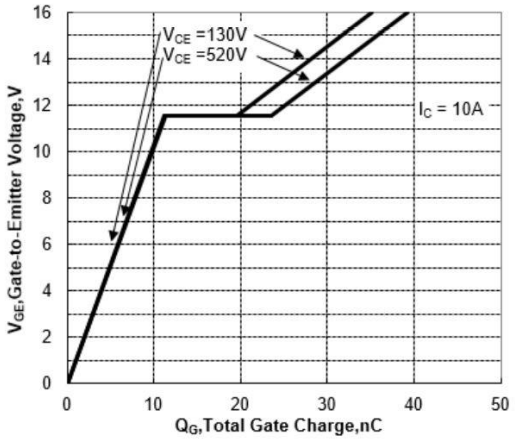


Fig 7. Typical Capacitance vs Collector-Emitter Voltage

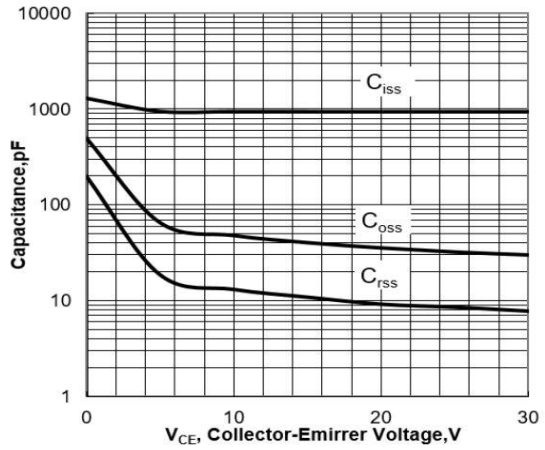


Fig 8. IGBT Transient Thermal Impedance vs Pulse Width

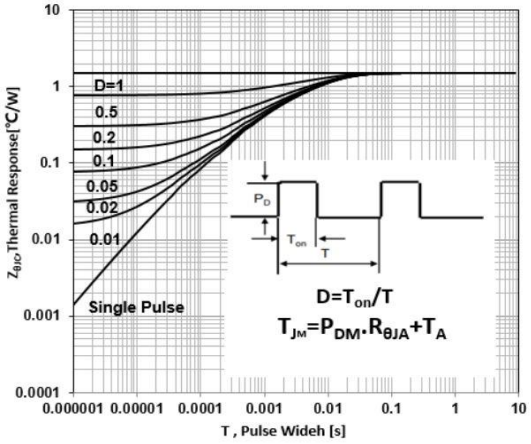


Fig 9. Diode Transient Thermal Impedance vs Pulse Width

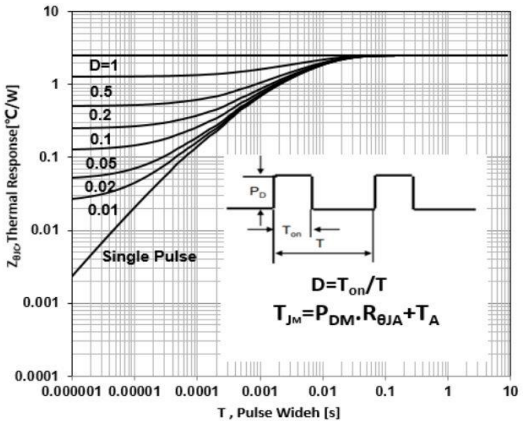


Fig 10. Inductive Switching Test Circuit

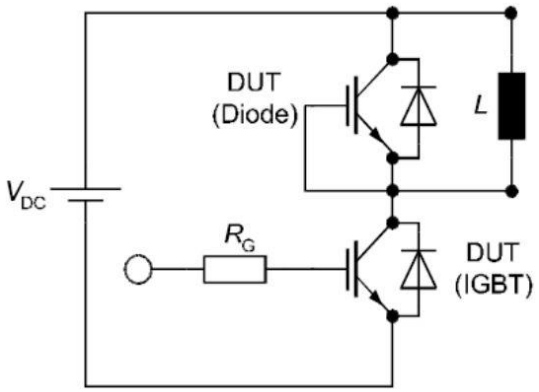


Fig 11. Inductive Switching Waveforms

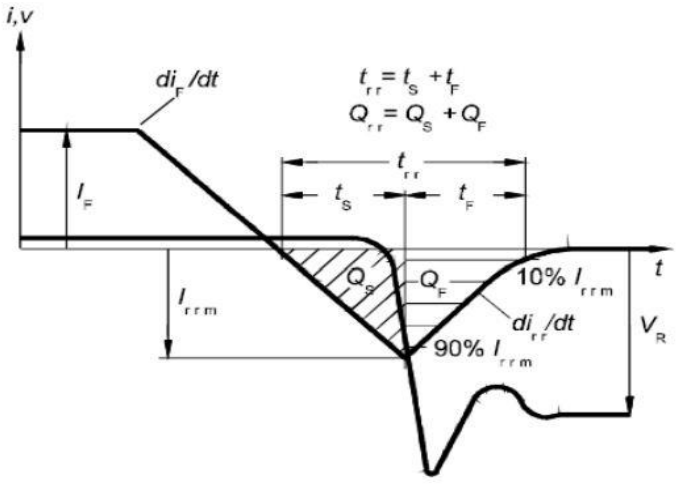


Fig 12. Inductive Switching Waveforms

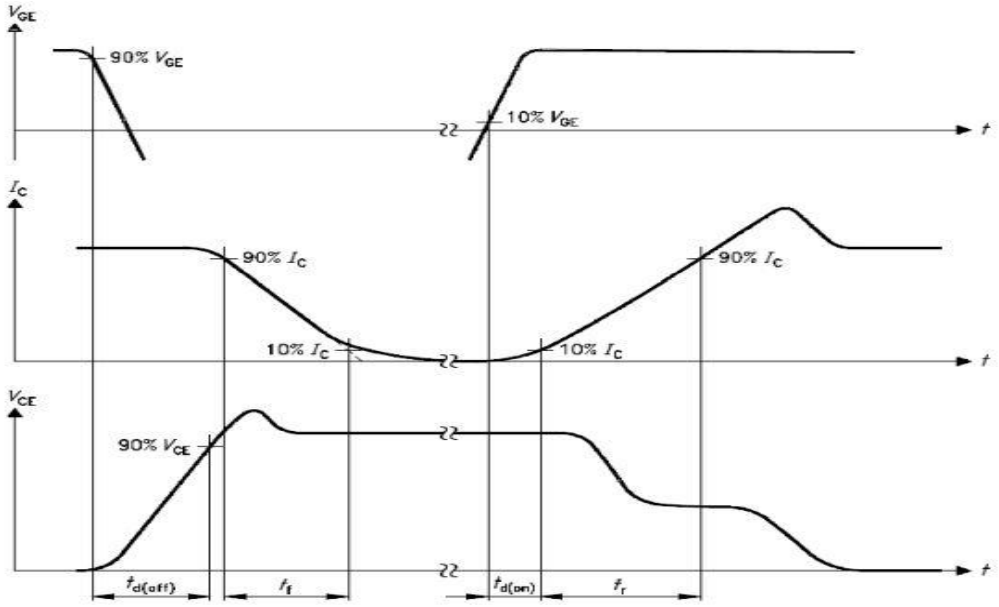
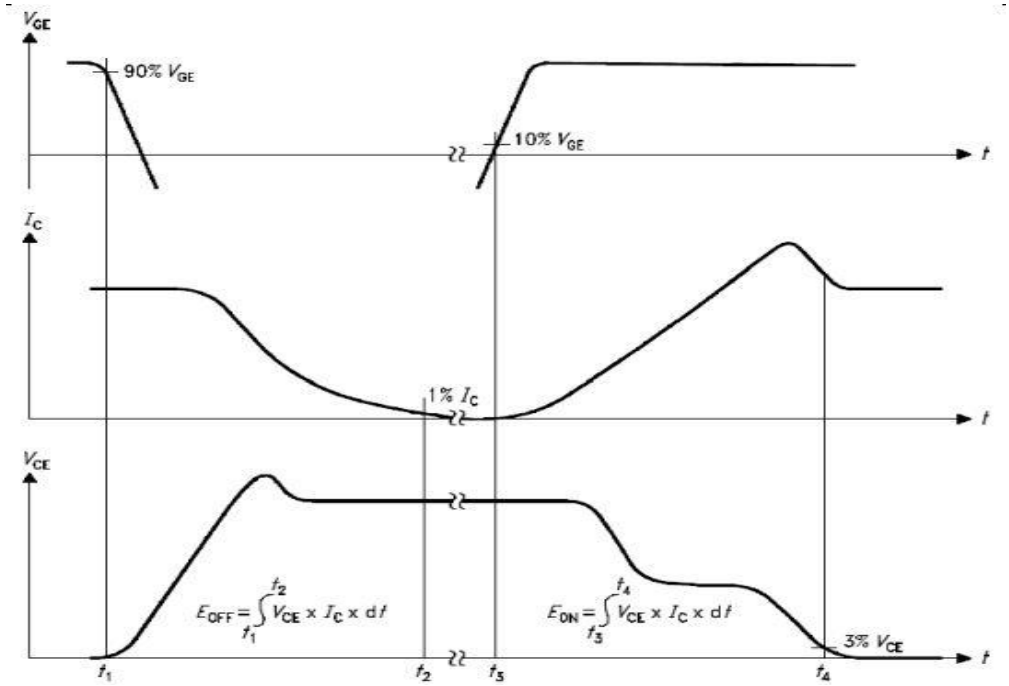
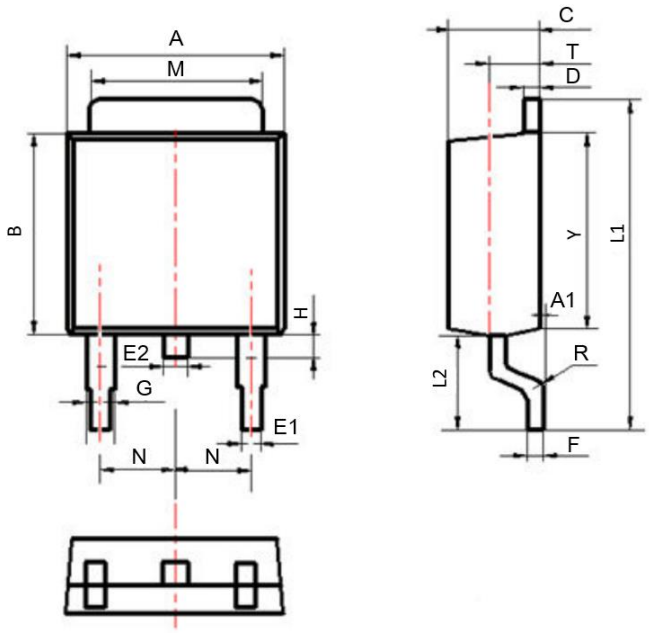


Fig 12. Inductive Switching Waveforms



PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	6.30	6.90
A1	0	0.13
B	5.70	6.30
C	2.10	2.50
D	0.30	0.60
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.20
L1	9.60	10.50
L2	2.70	3.10
H	0.60	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30

IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc. integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or server property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.