



DESCRIPTION

The AM06T65D is available in TO-247 Package.

V _{CES}	I _C	V _{CE}	P _D
650V	6A	1.7V	73W

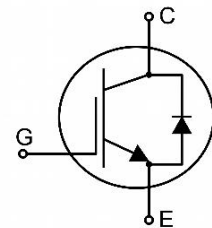
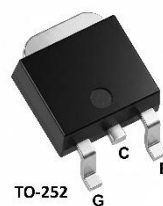
FEATURE

- High ruggedness performance
- Very tight parameter distribution
- Positive V_{CE} (sat) temperature coefficient
- High efficiency for motor control
- Excellent current sharing in parallel operation

APPLICATION

- Home Applications
- Motor Drivers
- Fan, Pumps, Vacuum cleaner

PIN DESCRIPTION



ORDERING INFORMATION

Package Type	Part Number	
TO-252	D	AM06T65D
Note	SPQ: 2,500pcs/Reel	
AiT provides all RoHS products		

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
Gate-Emitter Voltage	V _{GES}	±20	V
Continuous Collector Current	I _C	12	A
Continuous Collector Current T _C = 100 °C		6	A
Pulsed Collector Current, tp limited by Tvjmax	I _{CM}	24	A
Diode continuous forward current T _C = 100 °C	I _F	6	A
Diode maximum current, tp limited by Tvjmax	I _{FM}	24	A
Power Dissipation	P _D	73	W
Power Dissipation T _C = 100 °C		36	
Operating Junction Temperature Range	T _{VJ}	-40 to +175	°C
Storage Temperature Range	T _{STG}	-55 to +150	

THERMAL CHARACTERISTICS

Parameter	Symbol	Value		Unit
		Typ	Max.	
Thermal Resistance, Junction to Case for IGBT	R _{th(j-c)}	-	2	K/W
Thermal Resistance, Junction to case for Diode	R _{th(j-c)}	-	4	K/W
Thermal Resistance, Junction to Ambient	R _{th(j-a)}	-	90	K/W

Note: Pulse test: 300 us pulse width, 2 % duty cycle

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.

**ELECTRICAL CHARACTERISTICS** $T_{vj} = 25^{\circ}\text{C}$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Static Characteristics						
Collector-Emitter Breakdown Voltage	B _V CE _S	V _{GE} =0V, I _C =250uA	650	-	-	V
Collector-Emitter Leakage Current	I _{CES}	V _{CE} =650V, V _{GE} =0V	-	-	10	μA
Gate Leakage Current, Forward	I _{GES}	V _{GE} =±20V, V _{CE} =0V	-	-	±100	nA
Gate-Emitter Threshold Voltage	V _{GE(TH)}	V _{GE} =V _{CE} , I _C =1mA	5.2	6.2	7.2	V
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	V _{GE} =15 V, I _C =6A	-	1.7	-	V
		V _{GE} =15V, I _C =A, T _{vj} =150°C	-	2.1	-	V
Dynamic Characteristics						
Input Capacitance	C _{ies}	V _{CE} =25V, V _{GE} =0V, f=1MHz	-	480	-	pF
Output Capacitance	C _{oes}		-	22	-	
Reverse Transfer Capacitance	C _{res}		-	8	-	
Total gate charge	Q _g	V _{CC} =520V, V _{GE} =15V, I _C =6A	-	19	-	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{CC} =400V, V _{GE} =15V, I _C =6A, R _G =10Ω	-	10	-	ns
Rise Time	t _r		-	8	-	
Turn-Off Delay Time	t _{d(off)}		-	79	-	
Fall Time	t _f		-	56	-	
Turn-on Energy	E _{on}	Inductive load	-	0.11	-	mJ
Turn-off Energy	E _{off}		-	0.1	-	
Total Switching Energy	E _{ts}		-	0.21	-	
Turn-on Delay Time	t _{d(on)}	V _{CC} =400V, V _{GE} =15V, I _C =6A, R _G =10Ω	-	11	-	ns
Rise Time	t _r		-	10	-	
Turn-Off Delay Time	t _{d(off)}		-	108	-	
Fall Time	t _f		-	89	-	
Turn-on Energy	E _{on}	Inductive load, T _{vj} =150°C	-	0.16	-	mJ
Turn-off Energy	E _{off}		-	0.16	-	
Total Switching Energy	E _{ts}		-	0.32	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage	V _F	I _F =6A	-	1.6	-	V
		I _F =6A, T _{vj} =150°C	-	1.4	-	V
Diode Reverse Recovery Time	t _{rr}	V _R =400V, I _F =6A, diF/dt =-500A/us	-	55	-	ns
Diode peak reverse recovery current	I _{rrm}		-	10	-	A
Diode reverse recovery charge	Q _{rr}		-	306	-	nC
Diode Reverse Recovery Time	t _{rr}	V _R =400V, I _F =6A, diF/dt =-500A/us, T _{vj} =150°C	-	98	-	ns
Diode peak reverse recovery current	I _{rrm}		-	12	-	A
Diode reverse recovery charge	Q _{rr}		-	529	-	nC



TYPICAL PERFORMANCE CHARACTERISTICS

Fig1. Typical Output Characteristic ($T_{vj}=25^{\circ}\text{C}$)

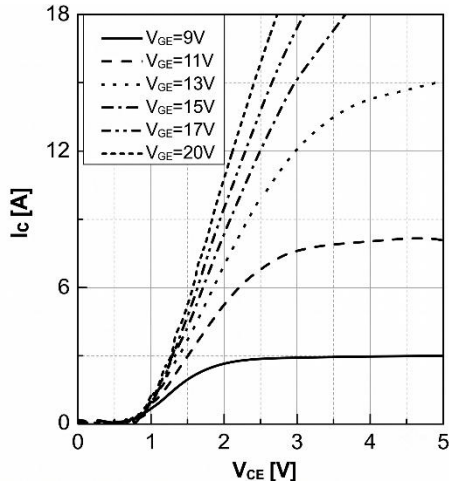


Fig 2. Typical Output Characteristic ($T_{vj}=175^{\circ}\text{C}$)

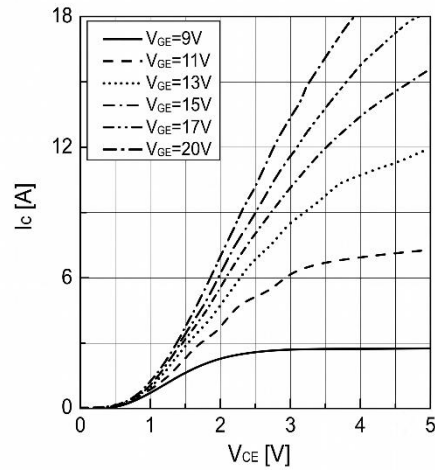


Fig 3. Power Dissipation as a Function of T_c

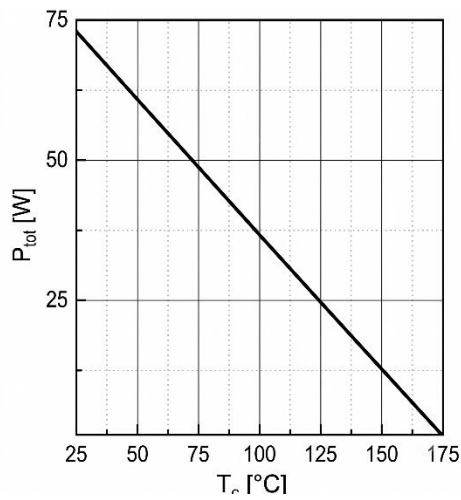


Fig 4. Typical Switching Time as a Function of I_{cv}

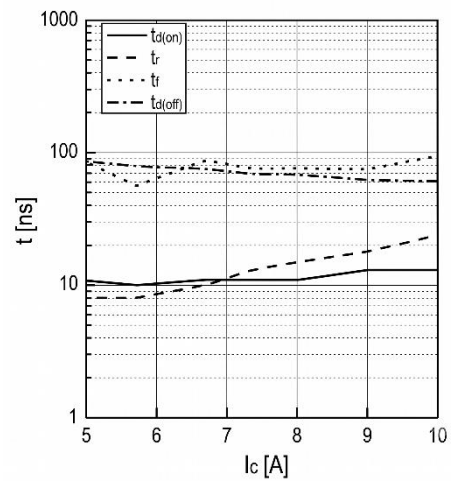


Fig 5. Typical $V_{GE(th)}$ as a Function of T_{vj} ($I_c=1\text{mA}$)

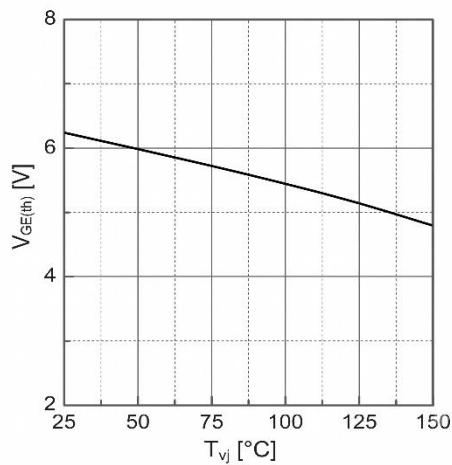


Fig 6. Typical V_F as a function of T_{vj}

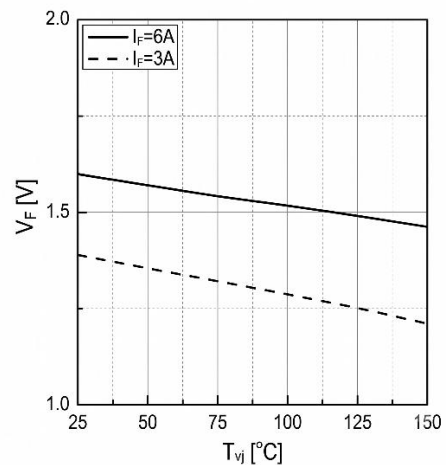




Fig 7. Typical V_{CEsat} as a function of T_{vj}

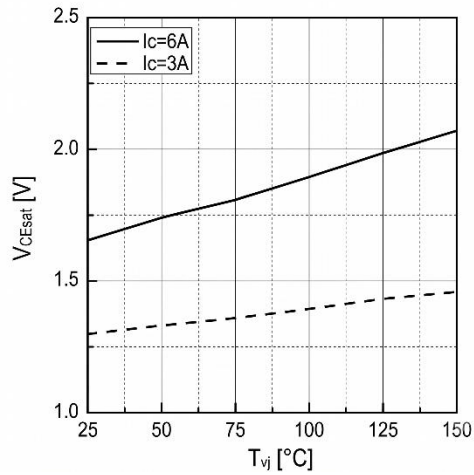


Fig 8. Typical Gate Charge

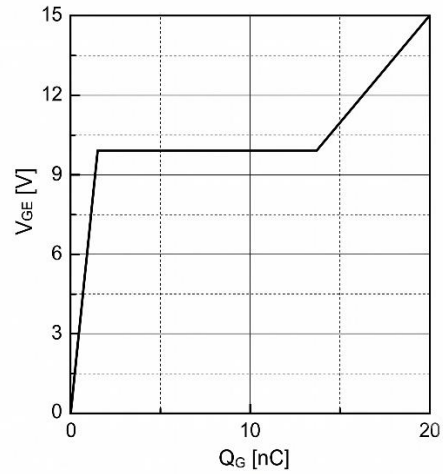


Fig 9. Typical switching time as a function of R_G

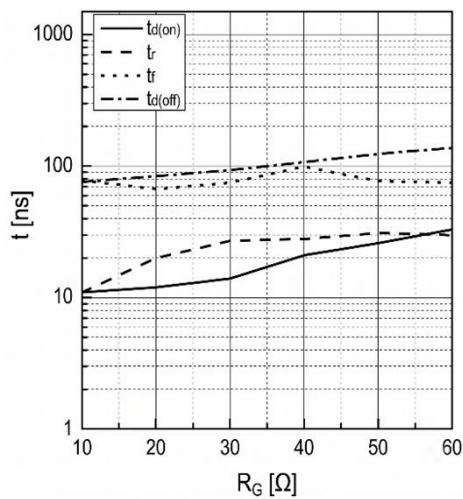


Fig 10. Typical switching energy losses as a function of I_c

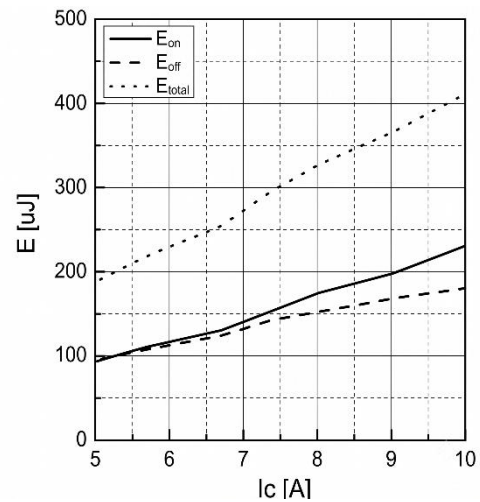


Fig 11. Typical switching energy losses as a function of R_G

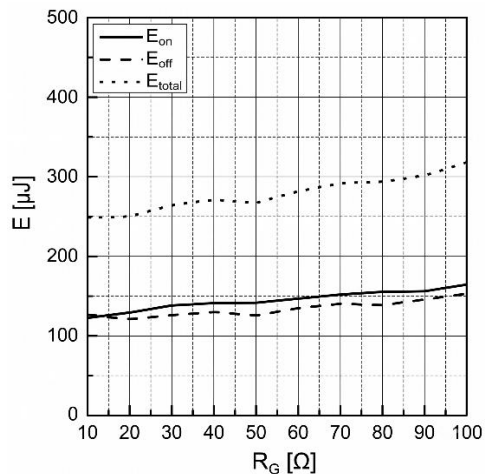


Fig 12. Typical I_F as a function of V_F

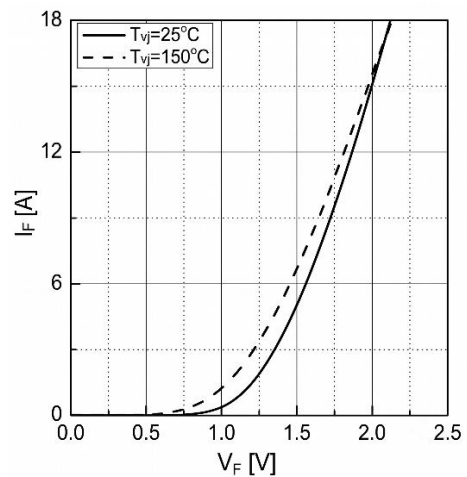




Fig 13. Typical capacitance as a function of V_{CE}
($f=1\text{MHz}$, $V_{GE}=0\text{V}$)

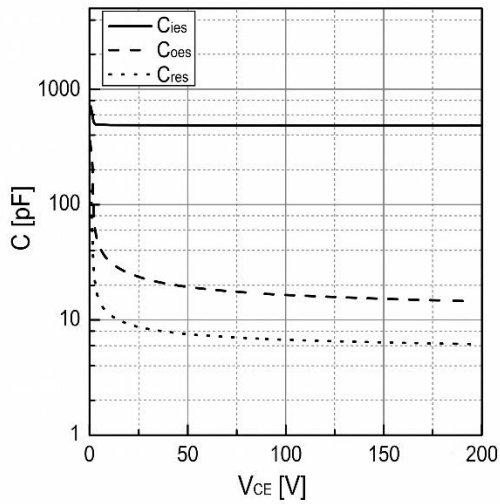
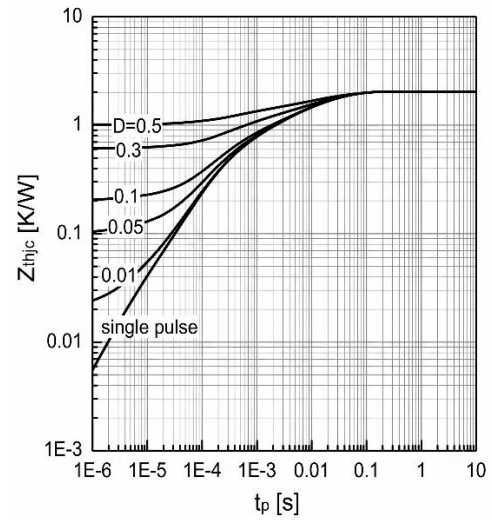


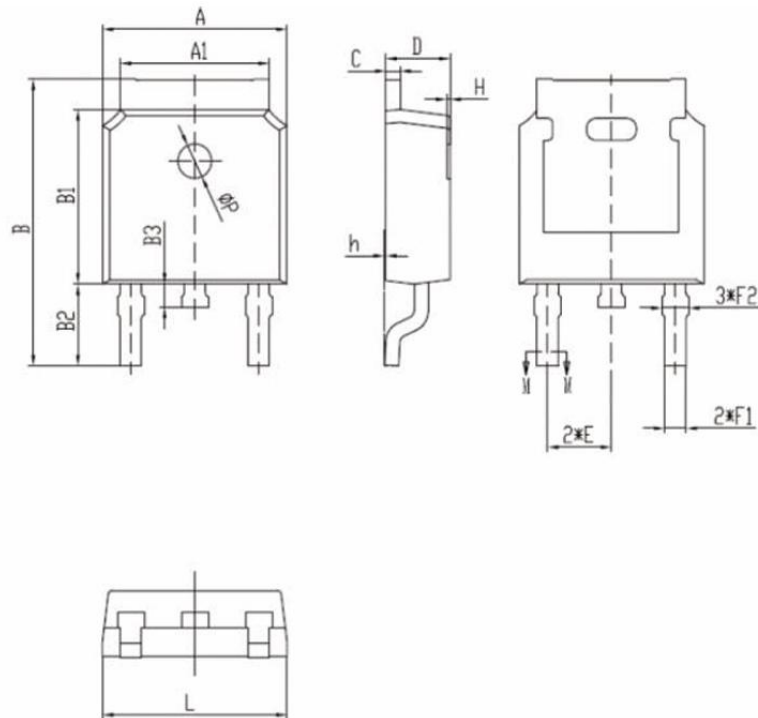
Fig 14. Transient thermal impedance of IGBT





PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



SYMBOL	MILLIMETERS	
	Min.	Max.
A	6.500	6.700
A1	5.160	5.460
B	9.770	10.170
B1	6.000	6.200
B2	2.600	3.000
B3	0.700	0.900
C	0.450	0.610
D	2.200	2.400
E	2.186	2.386
F1	0.670	0.870
F2	0.760	0.960
H	0.000	0.300
h	0.000	0.127
L	6.500	6.700
ΦP	1.100	1.300



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