DESCRIPTION

The AM13P10D is available in TO-252 package.

BVDSS	RDSON	ID
-100V	160mΩ	-13A

APPLICATIONS

- Motor Control
- Power Management
- Industrial DC/DC Conversion Circuits
- Automotive Systems

ORDERING INFORMATION

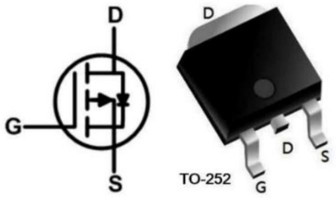
Package Type	Part Number	
TO-252 SPQ:2,500pcs/Reel	D	AM13P10DR
Note	R: Tape & Reel	
AiT provides all RoHS products		

FEATURES

- VDS = -100V, ID = -13A.

  $R_{DS(ON)}$ Typ = 160mΩ @ VGS = -10V
- Super high density cell design for extremely low R_{DS}(ON)
- Fast switching speed
- Low Thermal Impedance
- Exceptional on resistance and maximum
- DC current capability

PIN DESCRIPTION



Pin#	Symbol	Function
1	G	Gate
2	D	Drain
3	S	Source

ABSOLUTE MAXIMUM RATINGS

TC= 25°C, unless otherwise specified.

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous	T_A= 25°C	I_D	-13	A
	T_A= 100°C		-8.2	
Pulsed Drain Current		I_{DM}	-52	
Continuous Source Current (Diode Conduction)		I_S	-13	
Power Dissipation	T_A= 25°C	P_D	66	W
Operation Junction Temperature		T_J	150	°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 175	
Thermal Resistance, Junction-to-Case(Note 2)		$R_{θJA}$	110	°C/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.

ELECTRICAL CHARACTERISTICS

TJ = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, ID=-250μA	-100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-100V, V_{GS}=0V	-	-	-25	μA
		V_{DS}=-80V, V_{GS}=0V T_J=150℃	-	-	-250	
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS, I_D= 250μA	-1.0	-	-3.0	V
On State Drain Current	$I_{D(on)}$	V_{DS}≧ 10V, V_{DS}= 5V	-52	-	-	A
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-13A	-	160	170	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-50V, I_D=-7.8A	3.2	-	-	S
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-7.8A	-	-	-1.6	V
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-25V, f=1.0MHz	-	760	-	pF
Output Capacitance	C_{oss}		-	260	-	
Reverse Transfer Capacitance	C_{rss}		-	170	-	
Total Gate Charge	Q_g	V_{GS} = -10V, V_{DS} = -80V, I_D = -8.4A	-	-	58	nC
Gate-Source Charge	Q_{gs}		-	-	8.3	
Gate-Drain Charge	Q_{gd}		-	-	32	
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-50V, V_{GS}=-10V R_D=6.2Ω, R_G=9.1Ω	-	15	-	ns
Turn-on Rise Time	t_r		-	58	-	
Turn-off Delay Time	$t_{d(off)}$		-	45	-	
Turn-off Fall Time	t_f		-	46	-	

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

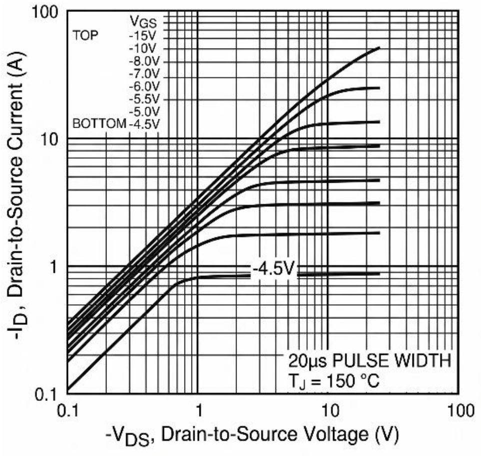


Fig 2. Typical Transfer Characteristics

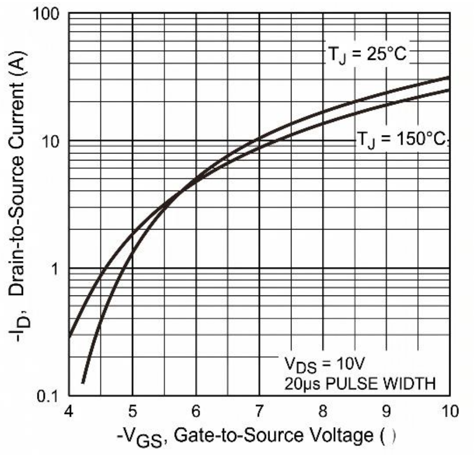


Fig 3. Normalized On-Resistance vs. Temperature

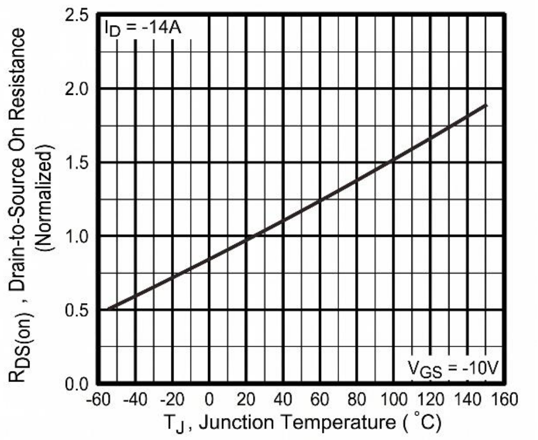


Fig 4. Typical Capacitance vs. Drain-to-Source Voltage

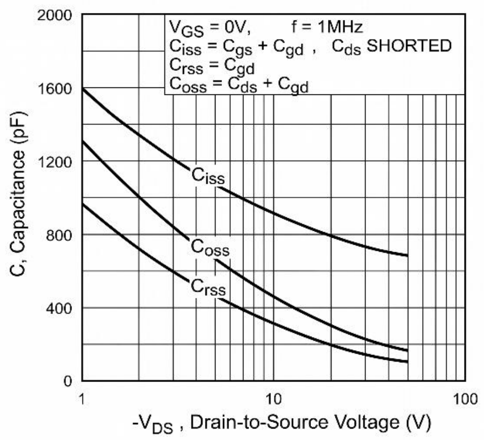


Fig 5. Typical Gate Charge vs. Gate-to-Source Voltage

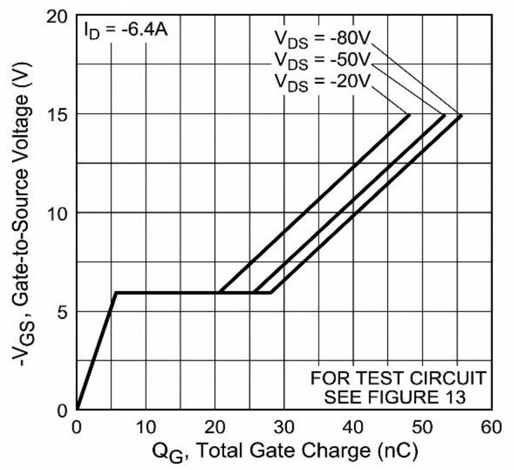


Fig 6. Typical Output Characteristics

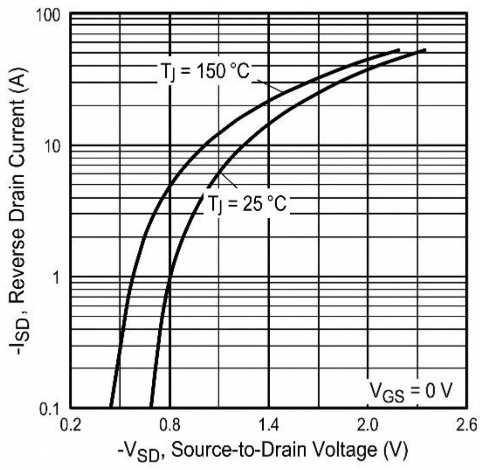


Fig 7. Typical Output Characteristics

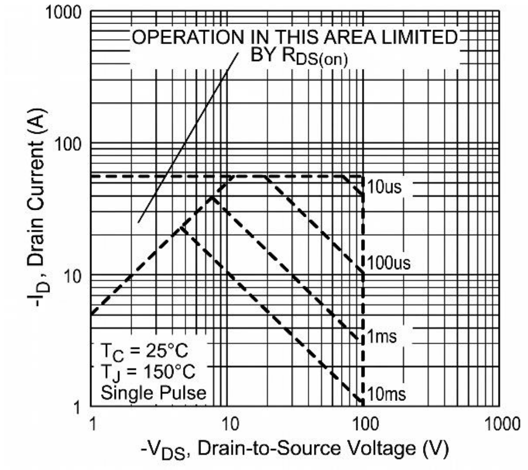


Fig 8. Maximum Drain Current Vs. Case Temperature

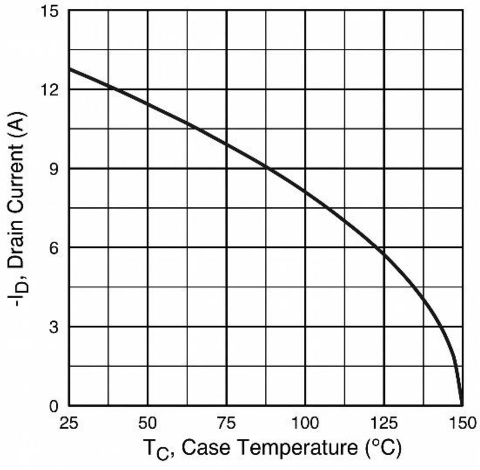


Fig 9a. Switching Time Test Circuit

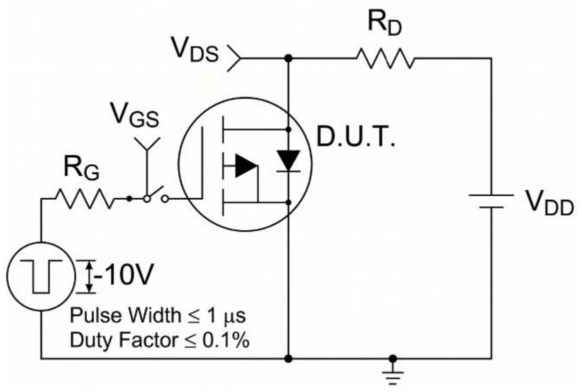


Fig 9b. Switching Time Waveforms

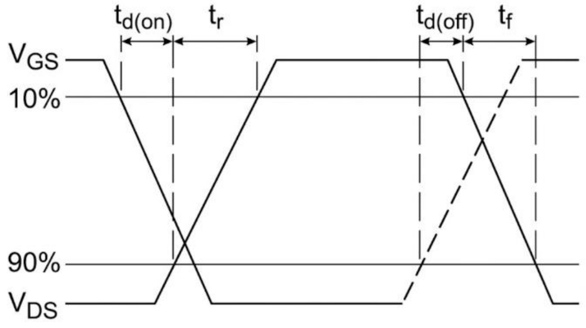


Fig 10. Maximum Effective Transient Thermal Impedance, Junction-to-Case

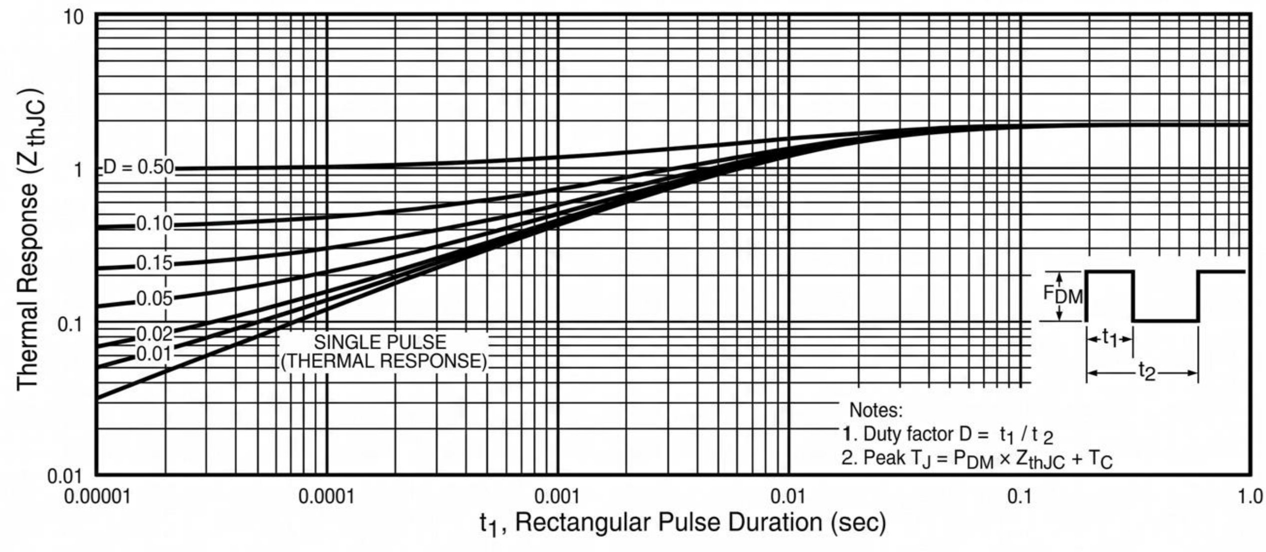


Fig 11a. Unclamped Inductive Test Circuit

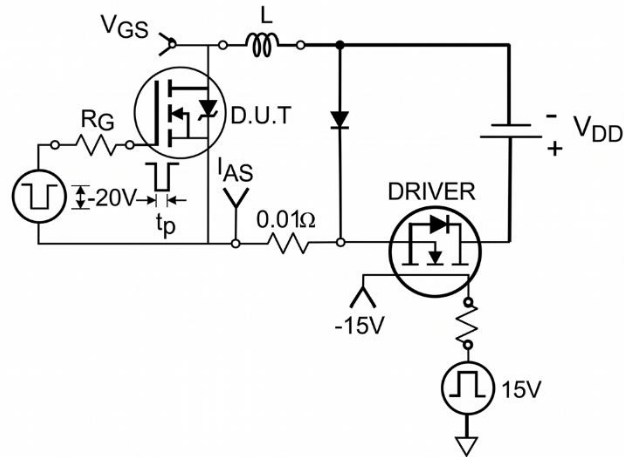


Fig 11b. Unclamped Inductive Waveforms

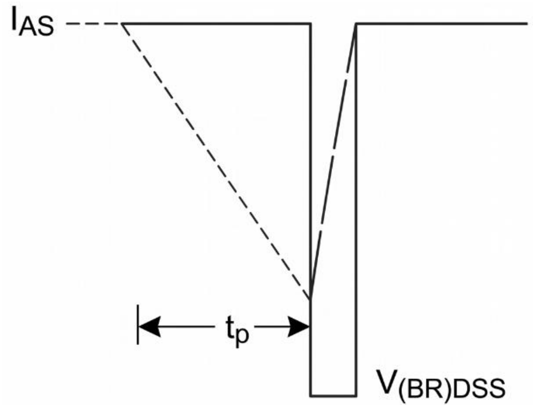


Fig 12a. Basic Gate Charge Waveform

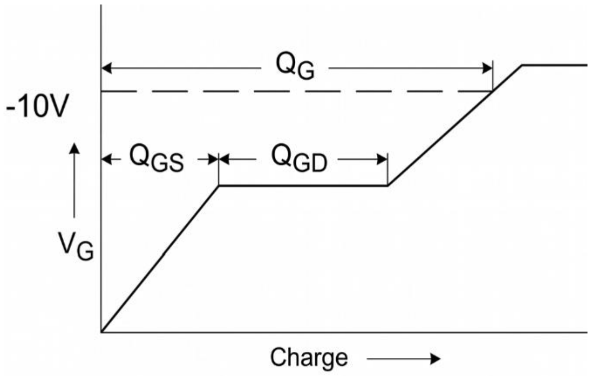


Fig 11c. Maximum Avalanche Energy Vs. Drain Current

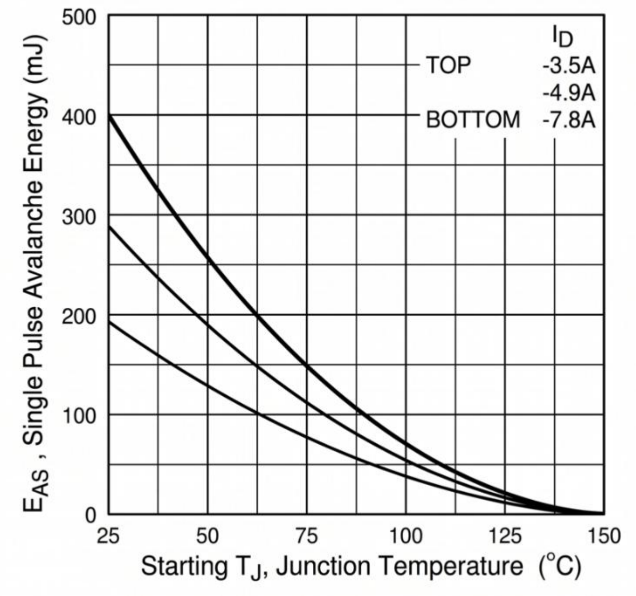
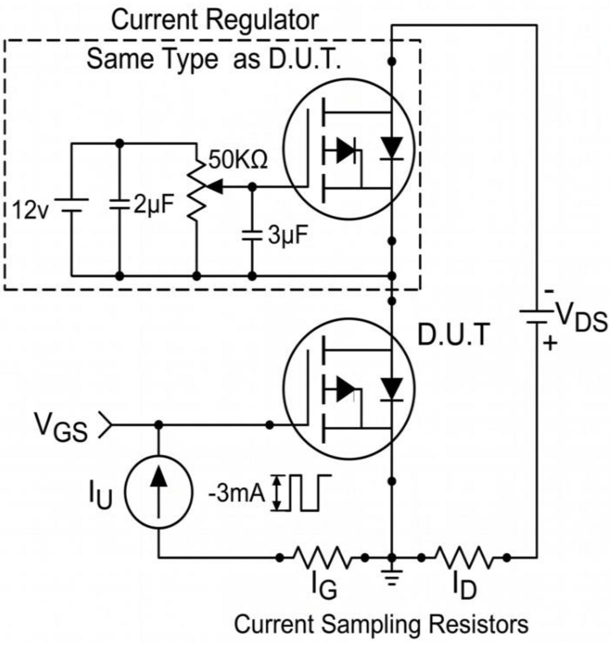
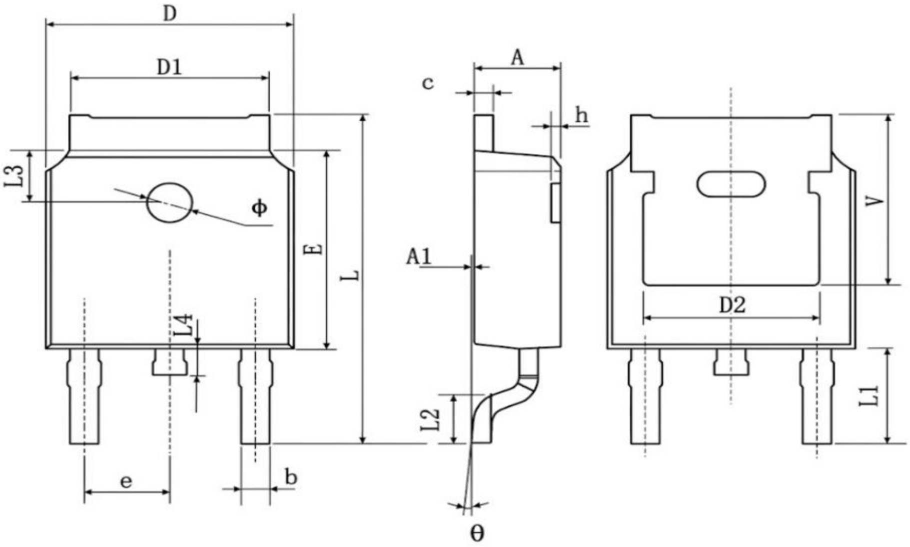


Fig 12b. Gate Charge Test Circuit



PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	2.200	2.400
A1	0.000	0.127
b	0.660	0.860
c	0.470	0.600
D	6.500	6.700
D1	5.100	5.460
D2	4.830 REF	
E	6.000	6.200
e	2.186	2.386
L	9.800	10.400
L1	2.900 REF	
L2	1.400	1.600
L3	1.800 REF	
L4	0.600	1.000
Θ	1.100	1.300
θ	0°	8°
h	0.000	0.300
V	5.400 REF	

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