

**DESCRIPTION**

The AM65R620D is available in TO-252 Package.

VDSS	RDS(ON)	ID
650V	620mΩ	5A

FEATURE

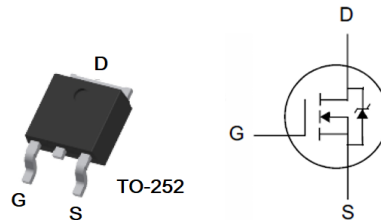
- Proprietary New Super-Junction Technology
- $R_{DS(ON), Typ.} = 620m\Omega @ V_{GS} = 10V$
- Very low FOM $R_{DS(on)} \times Q_g$

APPLICATIONS

- Power Factor Correction (PFC)
- Uninterruptible Power Supply (UPS)
- Switched Mode Power Supplies (SMPS)

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM65R620DVR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

PIN DESCRIPTION

Pin #	Symbol	Function
1	G	Gate
2,4	D	Drain
3	S	Source

ABSOLUTE MAXIMUM RATINGS

$T_C = 25^\circ C$, unless otherwise specified.

VDSS, Drain-to-Source Voltage		650V
VGSS, Gate-to-Source Voltage		±30V
ID, Continuous Drain Current		5A
IDM, Pulsed Drain Current ⁽¹⁾		20A
EAS, Single Pulse Avalanche Energy ⁽²⁾		140mJ
PD, Power Dissipation	$T_C = 25^\circ C$	60W
	Derating Factor above 25°C	0.48W/°C
RθJC, Thermal Resistance, Junction-to-Case		2.1°C/W
RθJA, Thermal Resistance, Junction-to-Ambient		75°C/W
dv/dt, Drain Source Voltage Slope, $V_{DS} \leq 480V$		50V/ns
dv/dt, Reverse diode dv/dt, $V_{DS} \leq 480V$, $I_{SD} < I_D$		50V/ns
TSTG, Storage Temperature Range		-55°C ~ +150°C
TJ, Junction Temperature Range		-55°C ~ +150°C

**ELECTRICAL CHARACTERISTICS**T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	650	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 650V, V _{GS} =0V	-	-	-1	μA
		V _{DS} = 520V, V _{GS} =0V, T _J = 125°C	-	-	100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = 30V, V _{DS} =0V	-	-	100	nA
		V _{GS} = -30V, V _{DS} =0V	-	-	-100	
On Characteristics						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	2.50	-	4.50	V
Static Drain-to-Source ON-Resistance *	R _{DS(ON)}	V _{GS} = 10V, I _D = 1.5A	-	620	680	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1.0MHZ	-	398	-	pF
Output Capacitance	C _{oss}		-	1.30	-	
Reverse Transfer Capacitance	C _{rss}		-	43	-	
Gate Series Resistance	R _G	f=1.0MHZ	-	14	-	Ω
Total Gate Charge	Q _g	V _{DD} = 325V , I _D =-2.5A V _{GS} =0V ~ -10V	-	9.40	-	nC
Gate-Source Charge	Q _{gs}		-	2	-	
Gate-Drain Charge	Q _{gd}		-	4	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 325V, I _D = 2.5A R _G =2.35Ω, V _{GS} = -10V	-	17	-	ns
Turn-On Rise Time	t _{rise}		-	4.50	-	
Turn-Off Delay Time	t _{d(off)}		-	31	-	
Turn-Off Fall Time	t _{fall}		-	11	-	
Reverse Diode						
Continuous Source Current	I _{SD}	Maximum Ratings	-	-	5	A
Pulsed Source Current	I _{SM}	Maximum Ratings	-	-	20	A
Drain Forward Voltage	V _{SD}	I _S = 3A, V _{GS} =0V	-	-	1.2	V
Reverse Recovery Time	t _{rr}	IF= 2.5A,	-	219	-	ns
Reverse Recovery Charge	Q _{rr}	di/dt =100A/μs	-	1080	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. V_{DD}= 50V, V_G=10V, R_G=25Ω, Starting T_J= 25°C L=10mH
3. Pulse Test: Pulse Width≤380μs, Duty Cycles≤2%.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. On-Region Characteristics

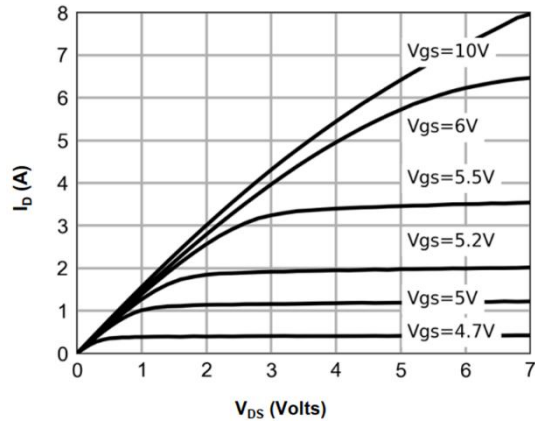


Fig 2. Transfer Characteristics

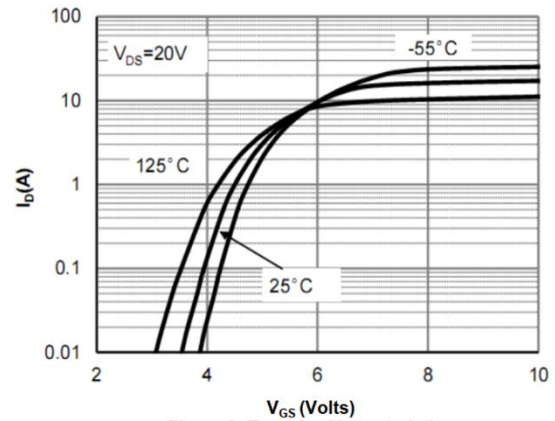


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

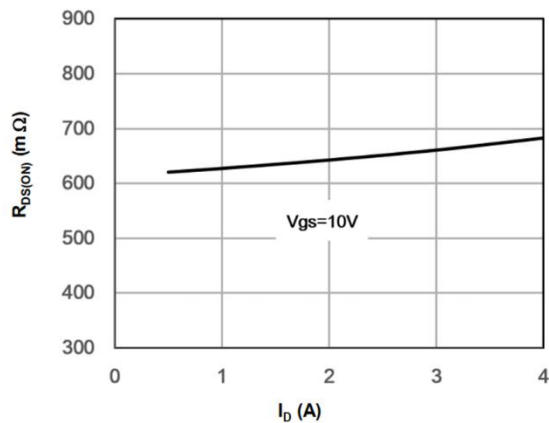


Fig 4. On-Resistance vs. Junction Temperature

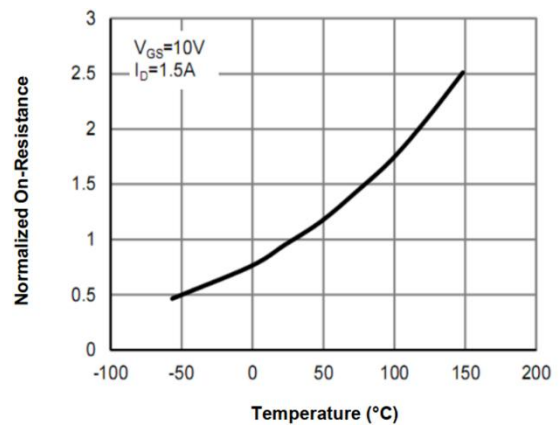


Fig 5. Break Down vs. Junction Temperature

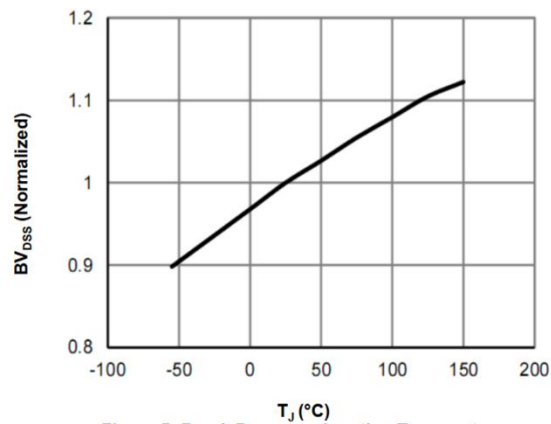


Fig 6. Body-Diode Characteristics

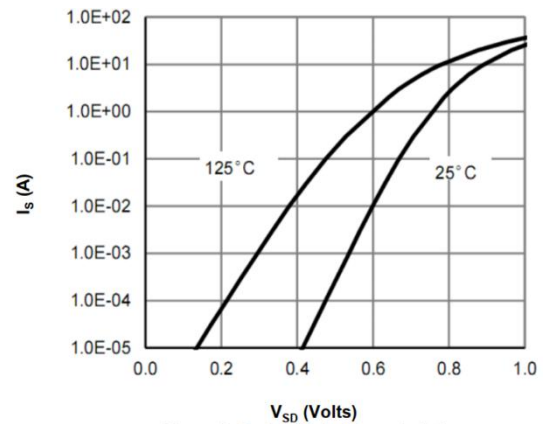




Fig 7. Gate Charge Characteristics

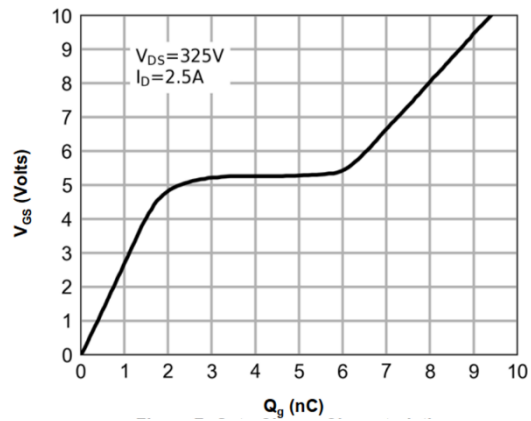


Fig 8. Capacitance Characteristics

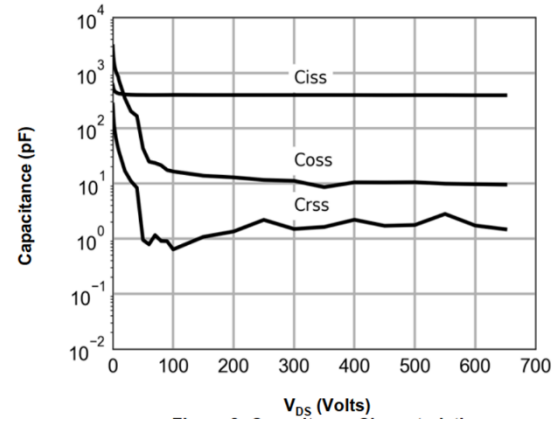


Fig 9. Maximum Forward Biased Safe Operating Area

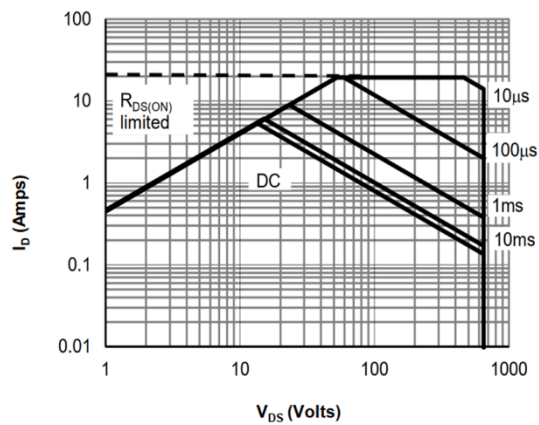




Fig 10. Peak Diode Recovery dv/dt Test Circuit

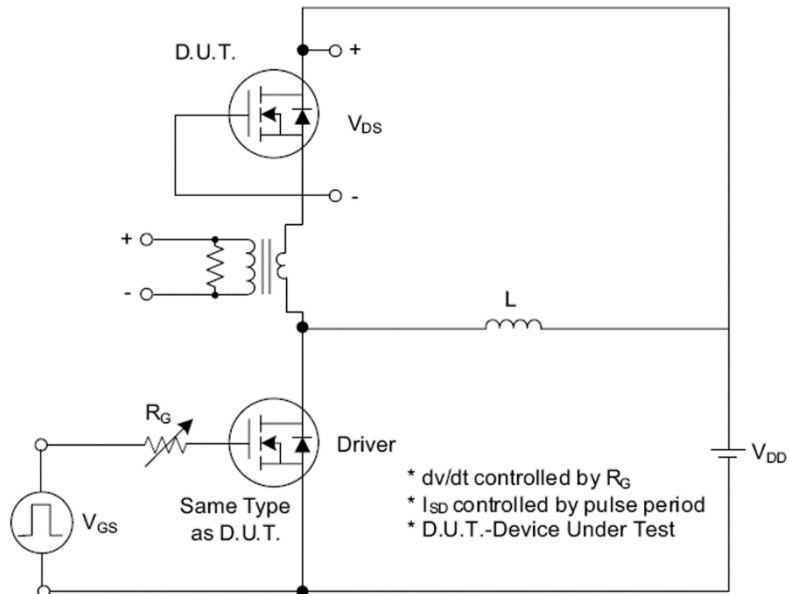


Fig 11. Peak Diode Recovery dv/dt Waveforms

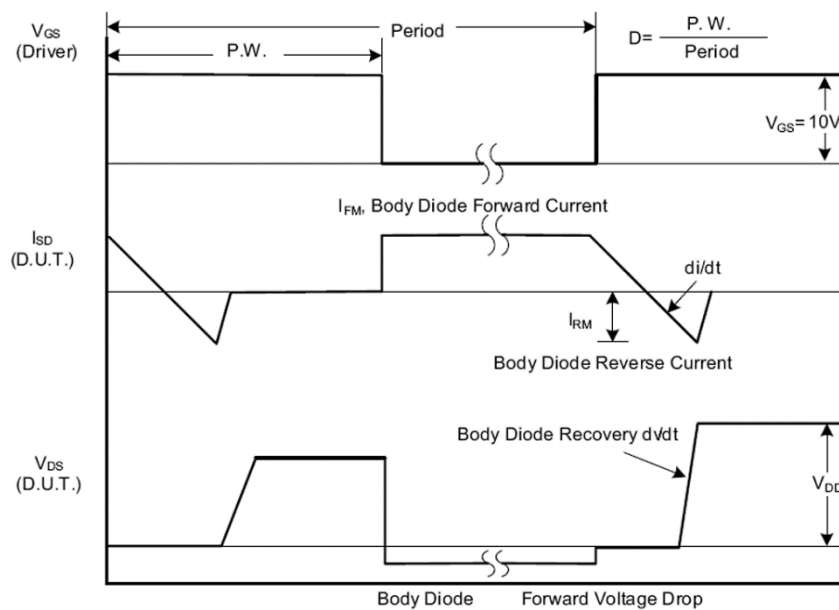




Fig 12. Switching Teat Circuit

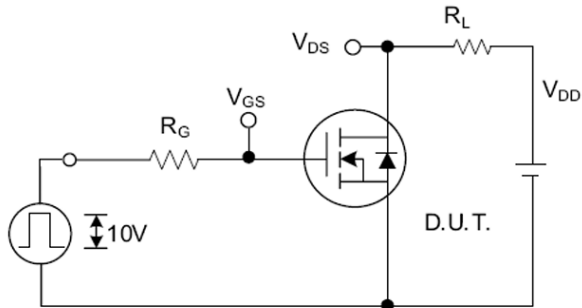


Fig 13. Switching Waveforms

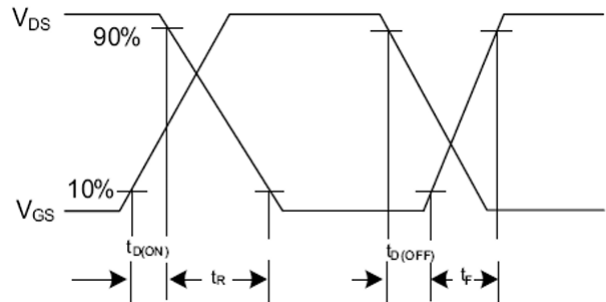


Fig 14. Gate Charge Test Circuit

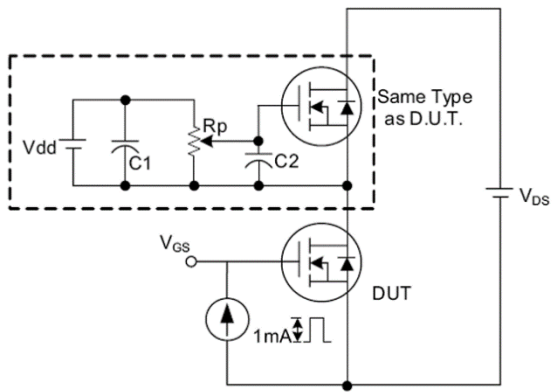


Fig 15. Gate Charge Waveform

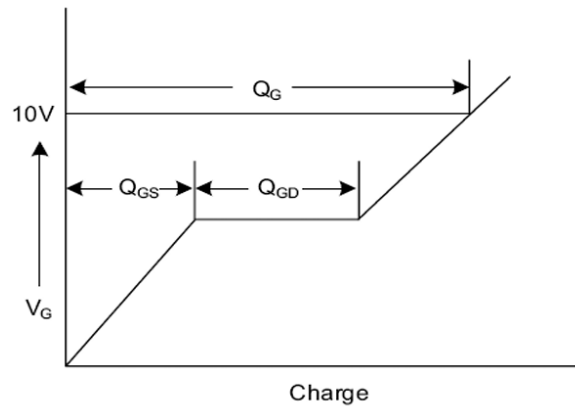


Fig 16. Unclamped Inductive Switching Teat Circuit

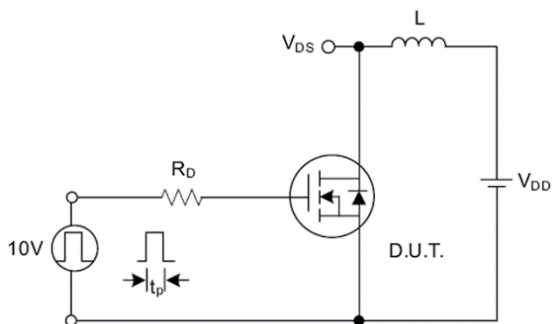
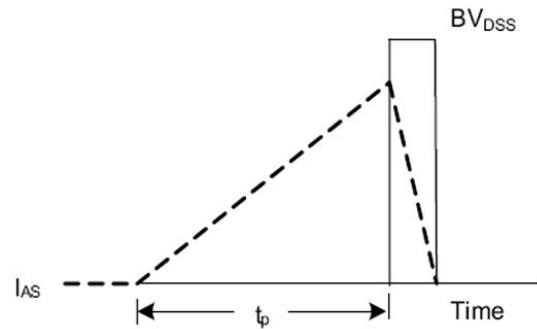


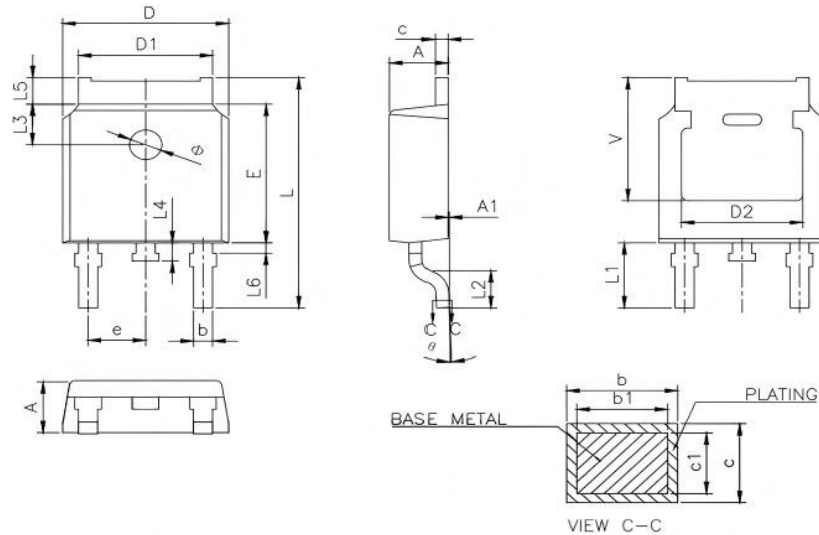
Fig 17. Unclamped Inductive Switching Waveform





PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Millimeters	
	Min.	Max.
A	2.200	2.400
A1	0.000	0.127
b	0.660	0.860
b1	0.650	0.810
D	6.500	6.700
D1	5.100	5.460
c	0.470	0.600
c1	0.460	0.560
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	1.80 REF.	
L4	0.600	1.000
L5	0.900	1.250
L6	0.150	0.750
Φ	1.100	1.300
θ	0°	8°
V	5.400 REF	



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