AMDV030N150URH

Single N-channel Trench MOSFET 30V 15mΩ 29A

FEATURES

- **Trench power MOSFET technology**
- **N-channel, logic level**
- **100% Avalanche tested**
- **Maximum 175°C junction temperature**
- **AEC-Q101 qualified**

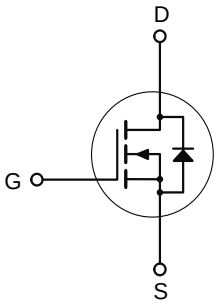
PDFN33

Top View

Bottom View

APPLICATIONS

- **DC-DC Converter**
- **Load Switch Applications**



KEY PERFORMANCE PARAMETERS

V_{DS}	**30**	V
$R_{DS(on),\ typ}$	**0.011**	Ω
I_D	**29**	A
Q_G	**8.3**	nC
Junction temperature, max	**175**	°C

RoHS Compliant
HALOGEN-FREE

ORDERING INFORMATION

Type / Ordering Code	Package	Marking	Packing	RoHS Status
AMDV030N150URH	PDFN33	30N150	Tape & Reel	Halogen Free

http://www.magnachip.com/

ABSOLUTE MAXIMUM RATINGS, at T_C = 25°C, unless otherwise specified

PARAMETER		SYMBOL	RATING	UNIT
Drain-source Voltage		V_{DS}	30	V
Gate-source Voltage		V_{GS}	± 20	V
Drain current	Tc=25°C	I_D	29	A
	Tc=100°C		20	A
[1] Pulsed drain current	Tc=25°C	I_{DM}	115	A
Total power dissipation	Tc=25°C	P_{tot}	20	W
	Tc=100°C		10	W
[2] Avalanche energy, single pulse		E_{AS}	6.5	mJ
Operating and storage temperature		T_j, T_{stg}	- 55 ~ 175	°C

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Thermal resistance, junction - case	$R_{\theta JC}$	7.6	K/W
[3] Thermal resistance, junction - ambient	$R_{\theta JA}$	40	K/W

ELECTRICAL CHARACTERISTICS (T_J = 25°C)

STATIC CHARACTERISTICS

PARAMETER	Symbol	Min.	Typ.	Max.	Unit	Conditions / Note
Drain-source breakdown voltage	$V_{(BR)DSS}$	30	-	-	V	V_{GS}=0 V, I_D=250 μA
Gate threshold voltage	$V_{GS(th)}$	1.3	1.9	2.7	V	V_{DS}=V_{GS}, I_D=250 μA
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	V_{DS}=30 V, V_{GS}=0 V
Gate-source leakage current	I_{GSS}	-	-	± 100	nA	V_{GS}=±20 V, V_{DS}=0 V
Drain-source on-state resistance	$R_{DS(on)}$	-	11.0	15.0	mΩ	V_{GS}=10 V, I_D=10 A
		-	15.9	22.5	mΩ	V_{GS}=4.5V, I_D=9 A
4) Gate resistance	R_G	-	2.2	-	Ω	f=1MHz
4) Transconductance	g_{fs}	-	13.5	-	S	V_{DS}=5 V, I_D=8 A

4) DYNAMIC CHARACTERISTICS

PARAMETER	Symbol	Min.	Typ.	Max.	Unit	Conditions / Note
Input capacitance	C_{iss}	-	483	-	pF	V_{GS}=0 V, V_{DS}=15 V, f=1 MHz
Output capacitance	C_{oss}	-	99	-	pF	V_{GS}=0 V, V_{DS}=15 V, f=1 MHz
Reverse transfer capacitance	C_{rss}	-	54	-	pF	V_{GS}=0 V, V_{DS}=15 V, f=1 MHz
Turn-on delay time	$t_{d(on)}$	-	7.3	-	ns	V_{DD}=15 V, V_{GS}=10 V, ID=10 A, $R_{G,ext}$=3Ω
Rise time	t_r	-	3.9	-	ns	V_{DD}=15 V, V_{GS}=10 V, ID=10 A, $R_{G,ext}$=3Ω
Turn-off delay time	$t_{d(off)}$	-	29.4	-	ns	V_{DD}=15 V, V_{GS}=10 V, ID=10 A, $R_{G,ext}$=3Ω
Fall time	t_f	-	14.7	-	ns	V_{DD}=15 V, V_{GS}=10 V, ID=10 A, $R_{G,ext}$=3Ω

4) GATE CHARGE CHARACTERISTICS

PARAMETER	Symbol	Min.	Typ.	Max.	Unit	Conditions / Note
Gate to source charge	Q_{gs}	-	1.4	-	nC	V_{DD}=15 V, I_D=10 A, V_{GS}=0 to 10 V
Gate to drain charge	Q_{gd}	-	1.8	-	nC	V_{DD}=15 V, I_D=10 A, V_{GS}=0 to 10 V
Gate charge total	$Q_{g(10V)}$	-	8.3	-	nC	V_{DD}=15 V, I_D=10 A, V_{GS}=0 to 10 V
Gate charge total	$Q_{g(4.5V)}$	-	4.1	-	nC	V_{DD}=15 V, I_D=10 A, V_{GS}=0 to 4.5 V
Gate plateau voltage	$V_{plateau}$	-	3.1	-	V	V_{DD}=15 V, I_D=10 A, V_{GS}=0 to 10 V

SOURCE-DRAIN DIODE

PARAMETER	Symbol	Min.	Typ.	Max.	Unit	Conditions / Note
4) Diode continous forward current	I_S	-	-	31	A	-
4) Diode pulse current	$I_{S,pulse}$	-	-	124	A	pulsed; tp ≤ 10 μs
Diode forward voltage	V_{SD}	-	0.83	1.1	V	V_{GS}=0 V, I_F=10 A
4) Reverse recovery time	t_{rr}	-	25.4	-	ns	I_F=10 A, d_{iF}/dt=100 A/μs
4) Reverse recovery charge	Q_{rr}	-	18.2	-	nC	I_F=10 A, d_{iF}/dt=100 A/μs

Notes

1. Pulse width limited by Tjmax
2. Starting TJ=25°C, L=0.1mH, I_{AS}=11.4A, V_{DD}=30V, V_{GS}=10V
3. Surface mounted FR-4 board by JEDEC (jesd51-7)
4. The parameter is not subject to production testing - guaranteed by design.

ELECTRICAL CHARACTERISTICS DIAGRAMS (25 ℃, unless otherwise noted)

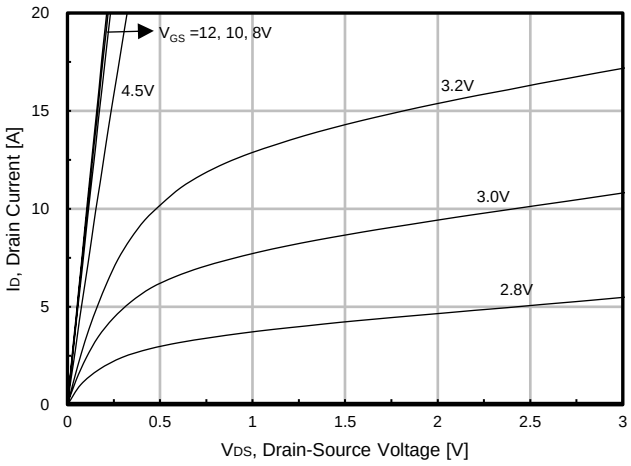


Fig. 1. Output Characteristics (25℃)

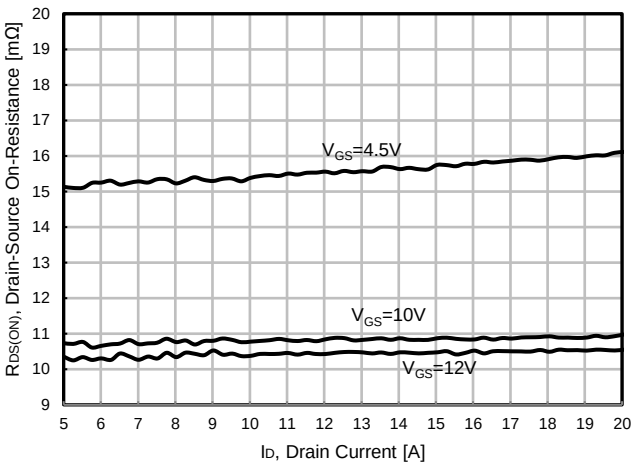


Fig. 2. Static On-Resistance Variation

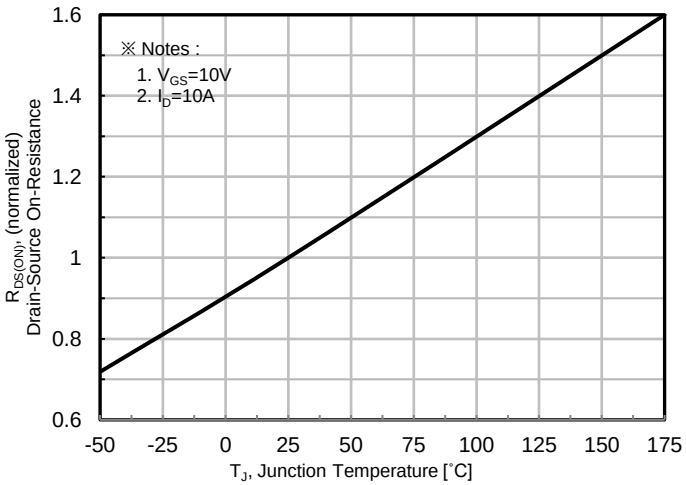


Fig. 3. On-Resistance vs. Junction Temperature

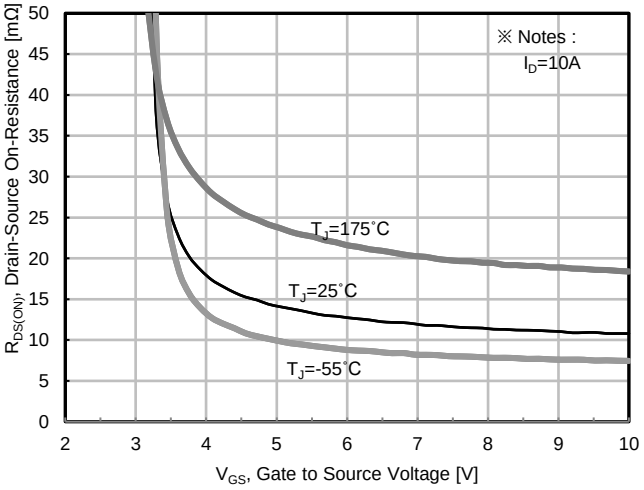


Fig. 4. On-Resistance vs. Gate to source Voltage

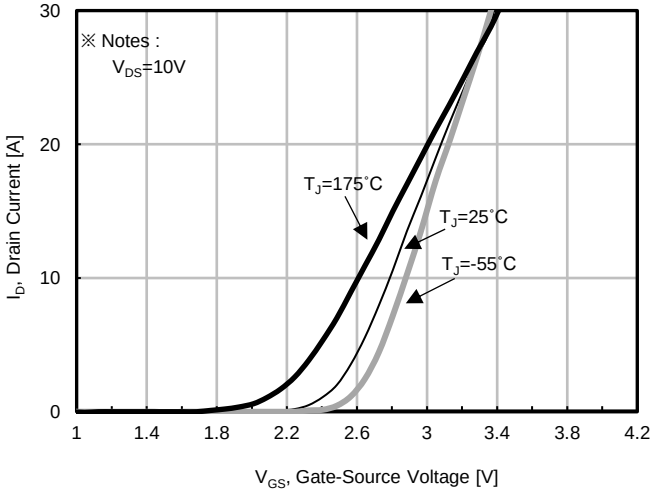


Fig. 5. Transfer Characteristics

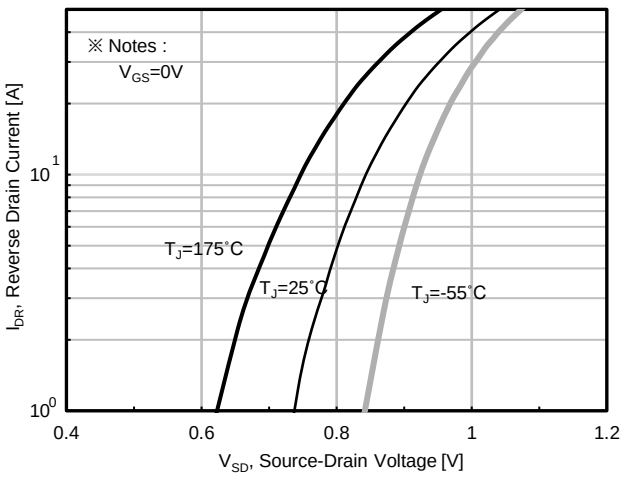


Fig. 6. Body Diode Forward Voltage Variation with Source Current and Temperature

ELECTRICAL CHARACTERISTICS DIAGRAMS (25 ℃, unless otherwise noted)

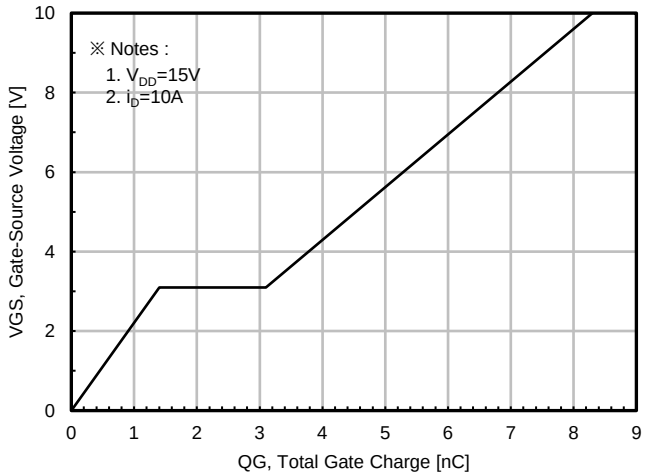


Fig. 7. Gate Charge

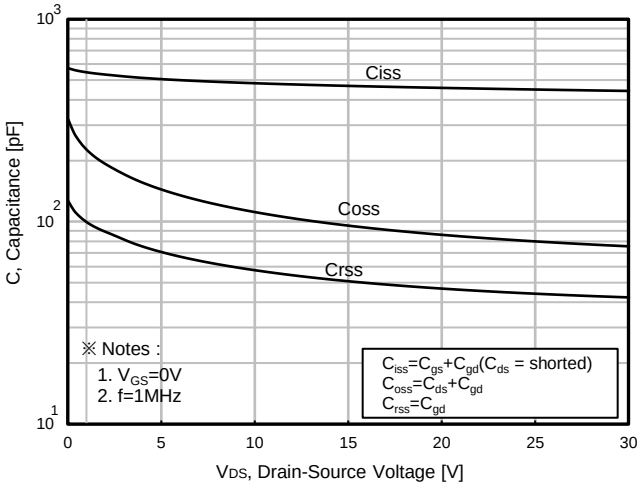


Fig. 8. Capacitance

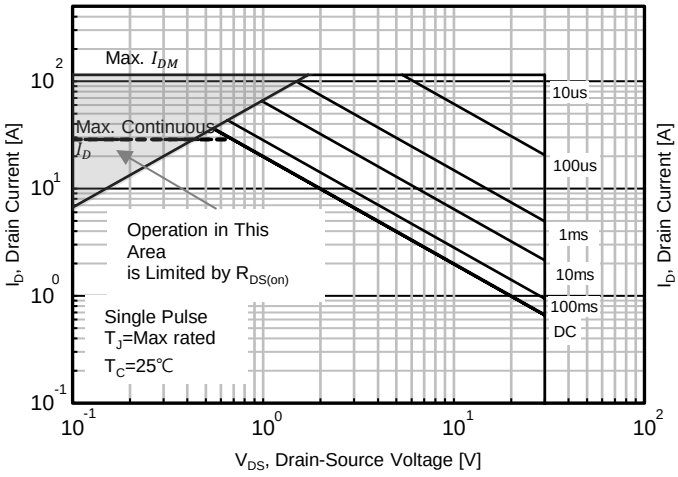


Fig. 9. Safe Operating Area, Junction-to-Ambient

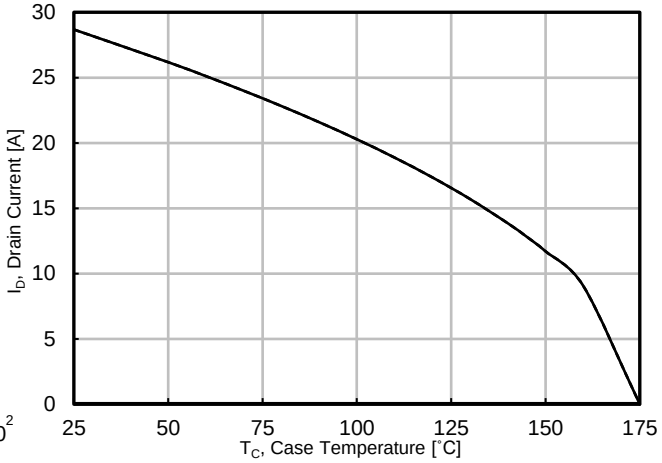


Fig. 10. Maximum Drain vs. Case Temperature

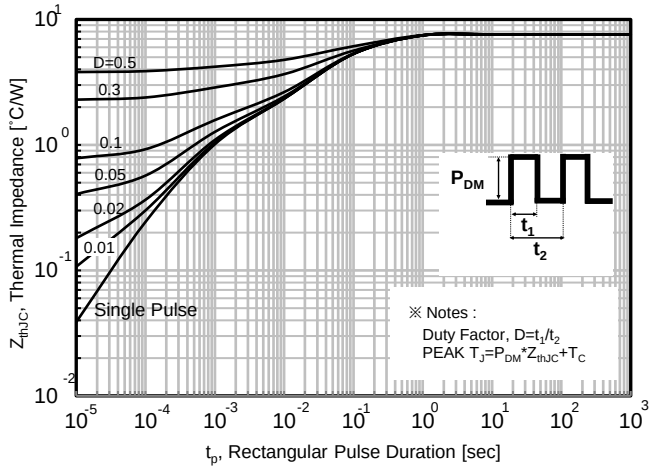
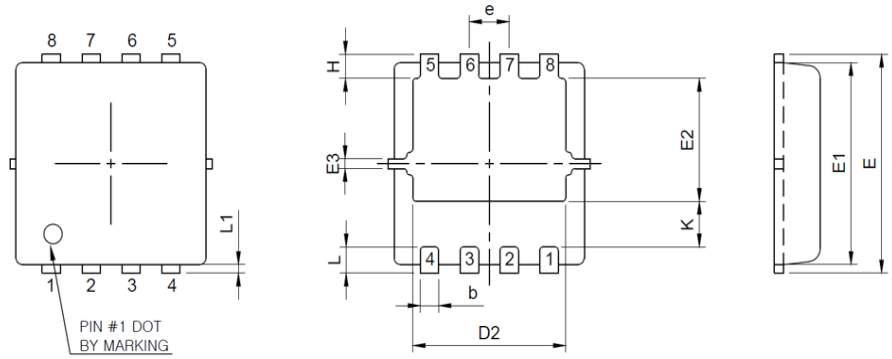
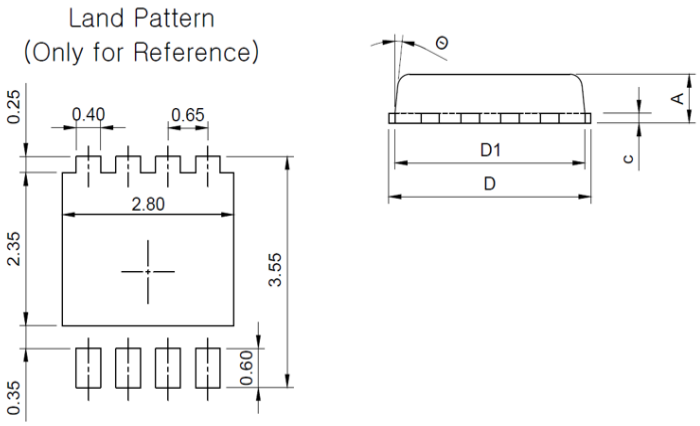


Fig.11 Transient Thermal Response Curve(Rthjc)

Package information

PDFN33





SYMBOL	DIMENSION [mm]	
	MIN	MAX
A	0.80	0.90
b	0.23	0.40
c	0.12	0.25
D	3.30 BSC	
D1	2.95	3.20
D2	2.28	2.73
E	3.30 BSC	
E1	2.95	3.20
E2	1.90	2.35
E3	0.20	
e	0.65 BSC	
k	0.60	0.95
L	0.15	0.56
L1	0.05	0.20
H	0.15	0.51
Θ	0°	12°

Notes

Package body size, length and width do not include mold flash, protrusions and gate burrs.

DISCLAIMER :

The Products are not designed for use in hostile environments, including, without limitation, aircraft, nuclear power generation, medical appliances, and devices or systems in which malfunction of any Product can reasonably be expected to result in a personal injury. Seller's customers using or selling Seller's products for use in such applications do so at their own risk and agree to fully defend and indemnify Seller.