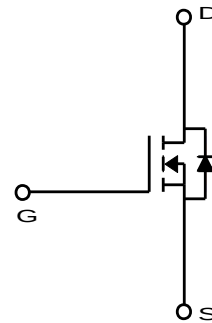
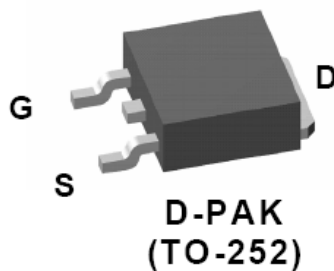


General Description

The MDD1051 uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDD1051 is suitable device for Synchronous Rectification For Server and general purpose applications.

Features

- $V_{DS} = 150V$
- $I_D = 28A$ @ $V_{GS} = 10V$
- $R_{DS(ON)} (MAX) < 46.0m\Omega$ @ $V_{GS} = 10V$
- 100% UIL Tested
- 100% Rg Tested



Absolute Maximum Ratings ($T_a = 25^\circ C$)

Characteristics		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	150	V
Gate-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current ⁽¹⁾	$T_c = 25^\circ C$ (Silicon Limited)	I_D	28	A
	$T_c = 100^\circ C$		18	
Pulsed Drain Current		I_{DM}	110	
Power Dissipation	$T_c = 25^\circ C$	P_D	70	W
	$T_c = 100^\circ C$		28	
Single Pulse Avalanche Energy ⁽²⁾		E_{AS}	50.0	mJ
Junction and Storage Temperature Range		T_J, T_{stg}	-55~150	$^\circ C$

Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient ⁽¹⁾	$R_{\theta JA}$	50	$^\circ C/W$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.8	

Ordering Information

Part Number	Temp. Range	Package	Packing	RoHS Status
MDD1051RH	-55~150°C	D-PAK	Tape & Reel	Halogen Free

Electrical Characteristics (T_J = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250μA, V _{GS} = 0V	150	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.2	2.2	3.2	
Drain Cut-Off Current	I _{DSS}	V _{DS} = 120V, V _{GS} = 0V	-	-	1.0	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±0.1	
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 20A	-	37.0	46.0	mΩ
Forward Transconductance	g _{fs}	V _{DS} = 10V, I _D = 20A	-	30	-	S
Dynamic Characteristics						
Total Gate Charge	Q _{g(10V)}	V _{DS} = 75V, I _D = 20A, V _{GS} = 10V	-	19.6	-	nC
Gate-Source Charge	Q _{gs}		-	5.2	-	
Gate-Drain Charge	Q _{gd}		-	5.2	-	
Input Capacitance	C _{iss}	V _{DS} = 40V, V _{GS} = 0V, f = 1.0MHz	-	1270	-	pF
Reverse Transfer Capacitance	C _{rss}		-	30	-	
Output Capacitance	C _{oss}		-	385	-	
Turn-On Delay Time	t _{d(on)}	V _{GS} = 10V, V _{DS} = 75V, I _D = 20A , R _G = 3.0Ω	-	15	-	ns
Rise Time	t _r		-	10	-	
Turn-Off Delay Time	t _{d(off)}		-	20	-	
Fall Time	t _f		-	5	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 20A, V _{GS} = 0V	-	0.80	1.3	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 20A, dI/dt = 100A/μs	-	73.0	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	245.0	-	nC

Note :

1. Surface mounted FR-4 board by JEDEC (jesd51-7). Continuous current at T_c=25°C is silicon limited
2. E_{AS} is tested at starting T_J = 25°C, L = 1.0mH, I_{AS} = 10.0A, V_{DD} = 50V, V_{GS} = 10V

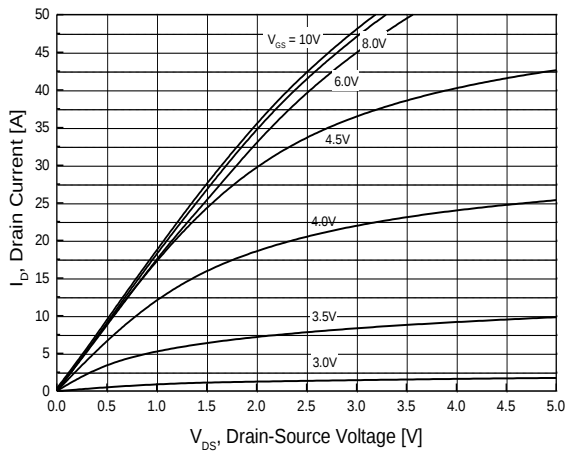


Fig.1 On-Region Characteristics

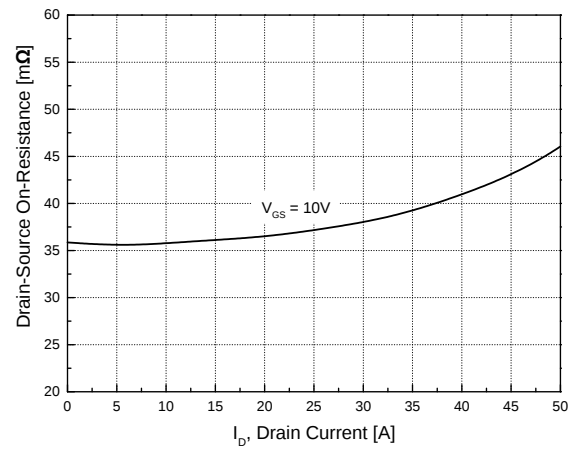


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

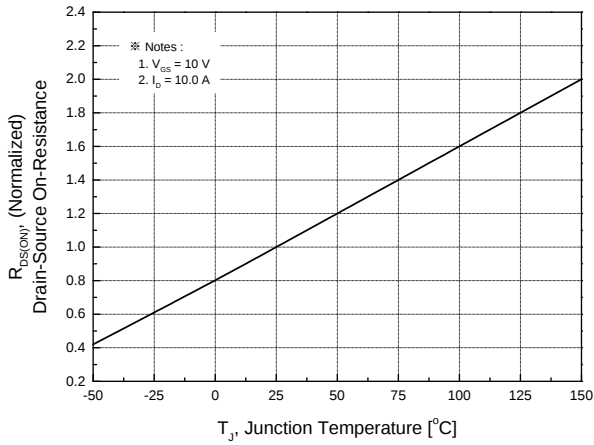


Fig.3 On-Resistance Variation with Temperature

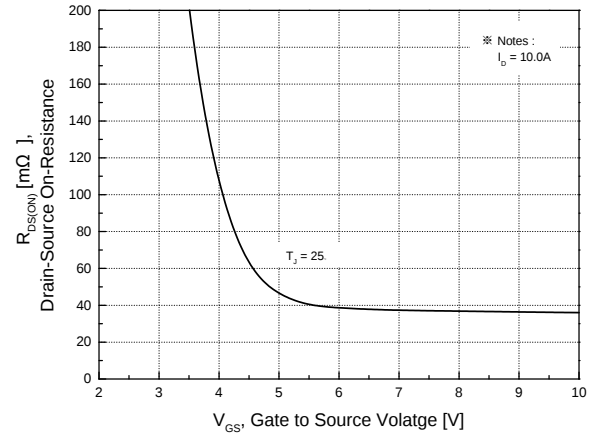


Fig.4 On-Resistance Variation with Gate to Source Voltage

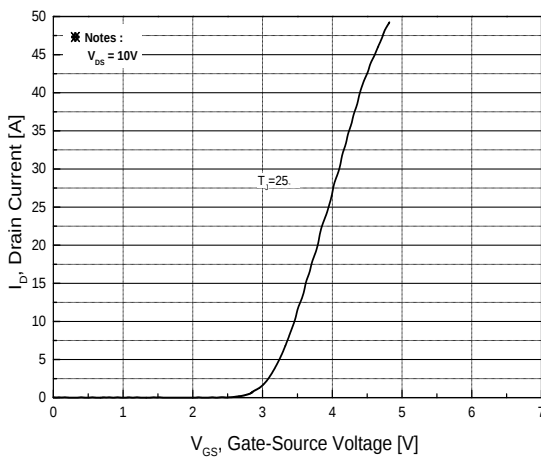


Fig.5 Transfer Characteristics

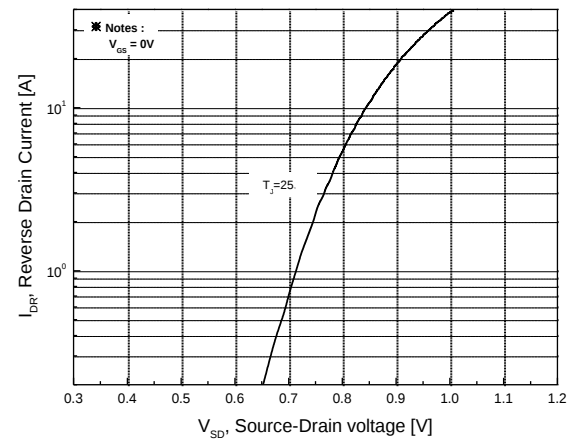
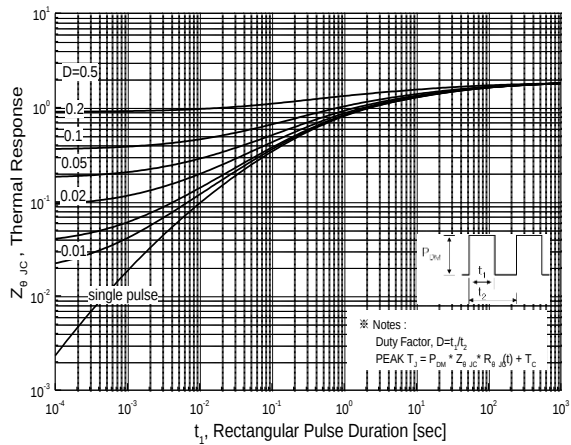
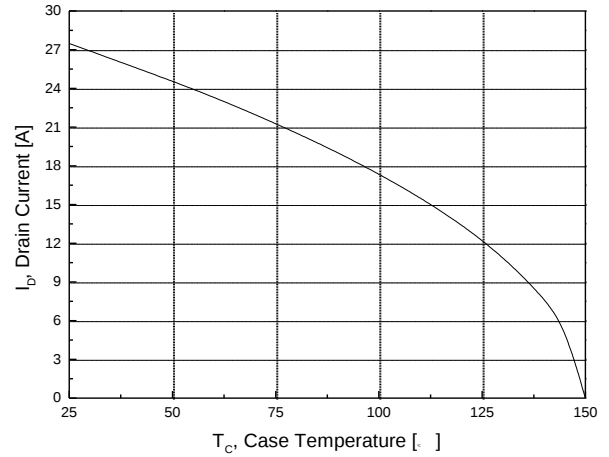
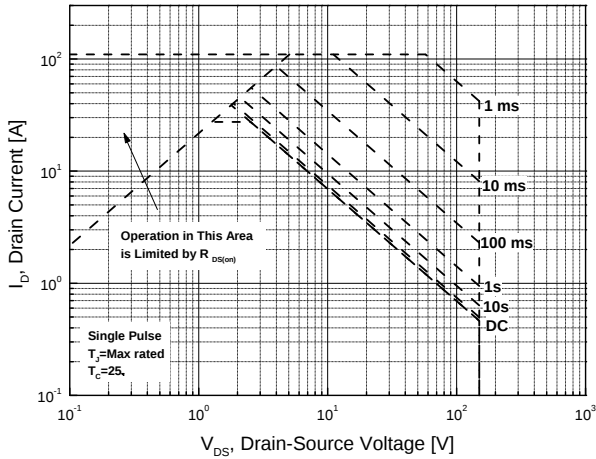
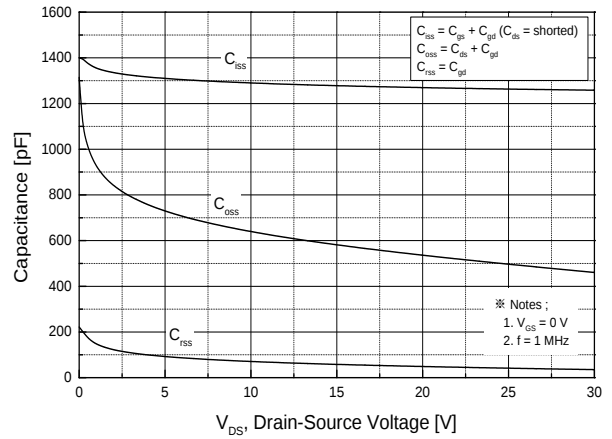
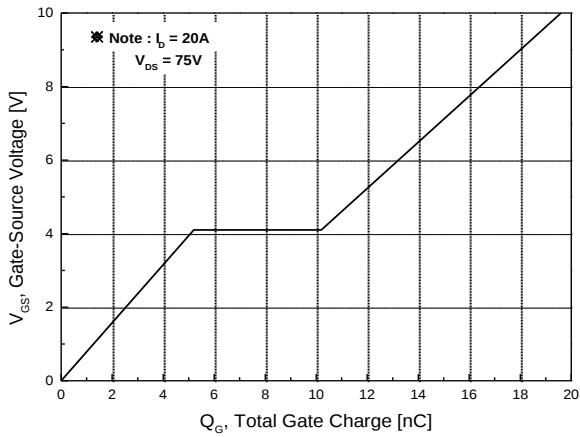


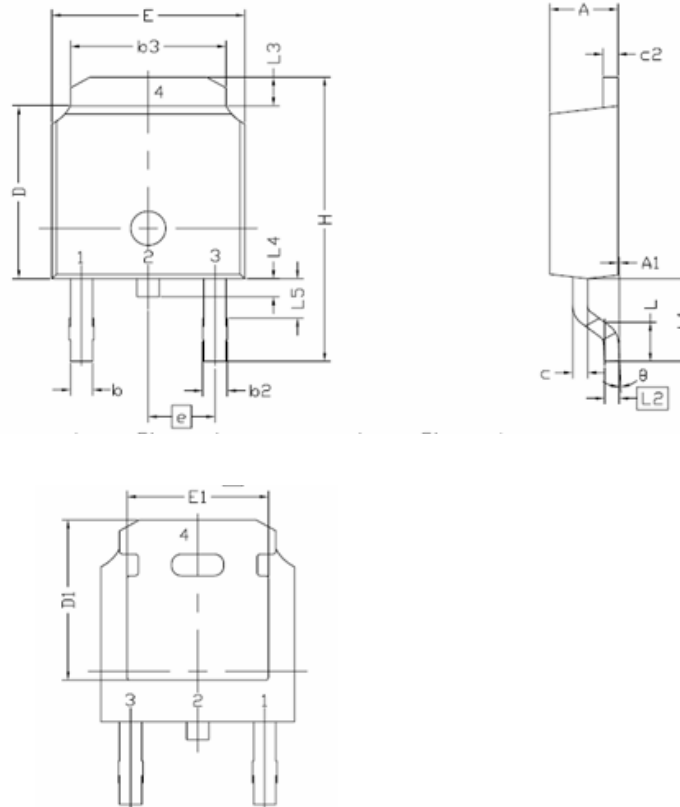
Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature



Package Dimension

D-PAK (TO-252)

Dimensions are in millimeters, unless otherwise specified



Symbol	Min.	Nom.	Max.
E	6,35	–	6,73
L	1,40	1,52	1,78
L1	2,74 REF		
L2	0,508 BCS		
L3	0,89	–	1,27
L4	–	–	1,02
L5	1,14	–	1,52
D	5,97	6,10	6,22
H	9,40	–	10,41
b	0,64	–	0,89
b2	0,76	–	1,14
b3	4,95	–	5,46
e	2,286 BSC		
A	2,18	–	2,39
A1	–	–	0,13
c	0,46	–	0,61
c2	0,46	–	0,89
D1	5,21	–	–
E1	4,32	–	–
⌀	0,00	–	10,00

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