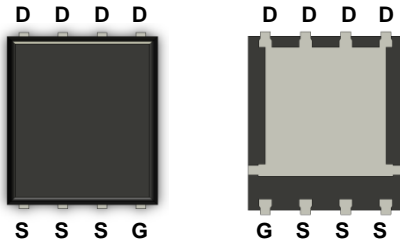


General Description

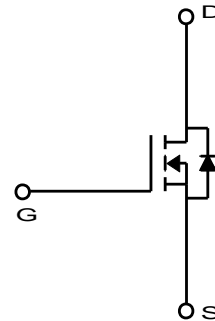
The MDU1515 uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDU1515 is suitable device for DC/DC Converter and general purpose applications.

Features

- $V_{DS} = 30V$
- $I_D = 57.4A$ @ $V_{GS} = 10V$
- $R_{DS(ON)} < 7.2 m\Omega$ @ $V_{GS} = 10V$
 $< 11.0 m\Omega$ @ $V_{GS} = 4.5V$
- 100% UIL Tested
- 100% Rg Tested



PowerDFN56



Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current ⁽¹⁾	I_D	$T_C=25^\circ C$	57.4
		$T_C=70^\circ C$	45.9
		$T_A=25^\circ C$	20.8 ⁽³⁾
		$T_A=70^\circ C$	16.6 ⁽³⁾
Pulsed Drain Current	I_{DM}	100	A
Power Dissipation	P_D	$T_C=25^\circ C$	41.6
		$T_C=70^\circ C$	26.6
		$T_A=25^\circ C$	5.5 ⁽³⁾
		$T_A=70^\circ C$	3.5 ⁽³⁾
Single Pulse Avalanche Energy ⁽²⁾	E_{AS}	65.0	mJ
Junction and Storage Temperature Range	T_J, T_{stg}	-55~150	°C

Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient ⁽¹⁾	$R_{\theta JA}$	22.7	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.0	

Ordering Information

Part Number	Temp. Range	Package	Packing	Quantity	RoHS Status
MDU1515URH	-55~150°C	PowerDFN56	Tape & Reel	3000 units	Halogen Free

Electrical Characteristics (T_J =25°C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 250\mu A, V_{GS} = 0V$	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.9	2.7	
Drain Cut-Off Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$ $T_J=55^\circ C$	-	-	1 5	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 0.1	
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 16A$ $T_J=125^\circ C$	-	6.3 9.1	7.2 10.5	m Ω
Forward Transconductance	g_{fs}	$V_{DS} = 5V, I_D = 10A$	-	35	-	S
Dynamic Characteristics						
Total Gate Charge	$Q_{g(10V)}$	$V_{DS} = 15.0V, I_D = 16A,$ $V_{GS} = 10V$	13.1	17.5	21.9	nC
Total Gate Charge	$Q_{g(4.5V)}$		6.3	8.4	10.5	
Gate-Source Charge	Q_{gs}		-	3.6	-	
Gate-Drain Charge	Q_{gd}		-	2.8	-	
Input Capacitance	C_{iss}	$V_{DS} = 15.0V, V_{GS} = 0V,$ $f = 1.0MHz$	816	1088	1360	pF
Reverse Transfer Capacitance	C_{riss}		79	105	131	
Output Capacitance	C_{oss}		164	218	273	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 15.0V,$ $I_D = 16A, R_G = 3.0\Omega$	-	3.0	-	ns
Rise Time	t_r		-	8.6	-	
Turn-Off Delay Time	$t_{d(off)}$		-	24.3	-	
Fall Time	t_f		-	8.2	-	
Gate Resistance	R_g	$f=1 MHz$	1.0	3.0	4.5	Ω
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	$I_S = 16A, V_{GS} = 0V$	-	0.8	1.1	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 16A, di/dt = 100A/\mu s$	-	24.9	37.4	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	16.5	24.8	nC

Note :

- Surface mounted FR-4 board by JEDEC (jesd51-7)
- E_{AS} is tested at starting $T_j = 25^\circ C$, $L = 0.1mH$, $I_{AS} = 18A$, $V_{DD} = 27V$, $V_{GS} = 10V$
- $T < 10sec$.

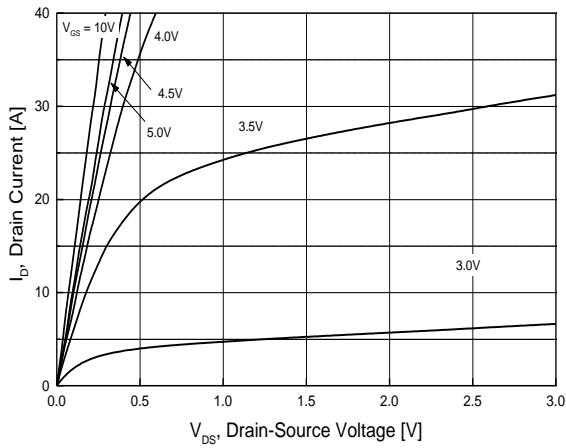


Fig.1 On-Region Characteristics

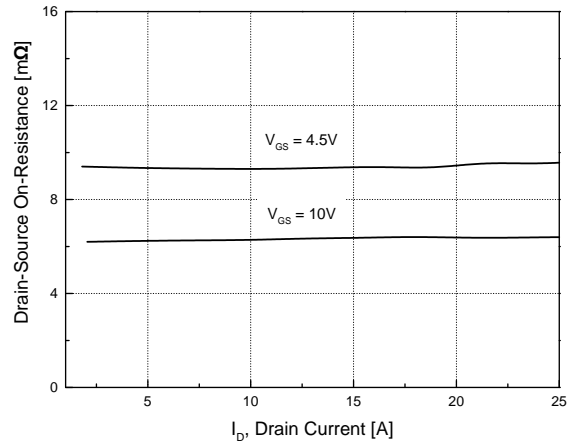


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

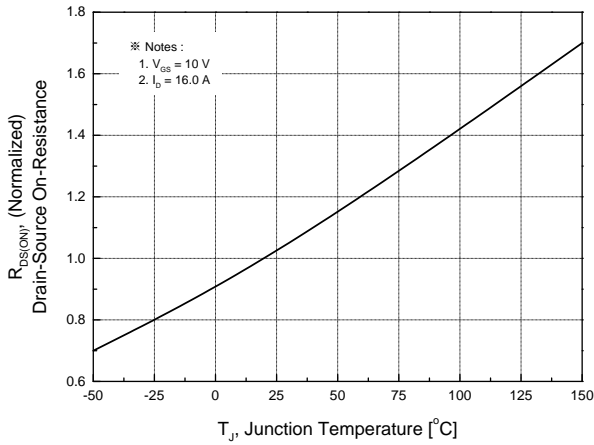


Fig.3 On-Resistance Variation with Temperature

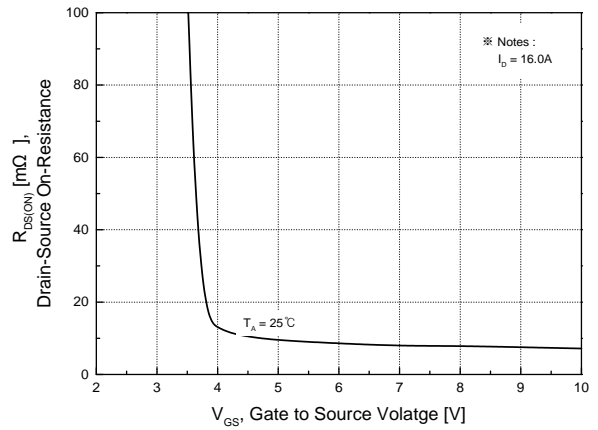


Fig.4 On-Resistance Variation with Gate to Source Voltage

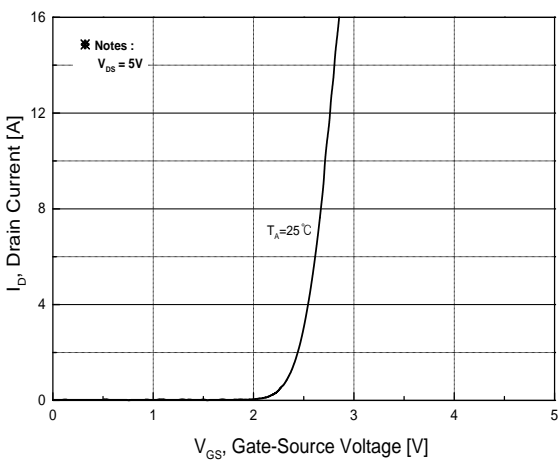


Fig.5 Transfer Characteristics

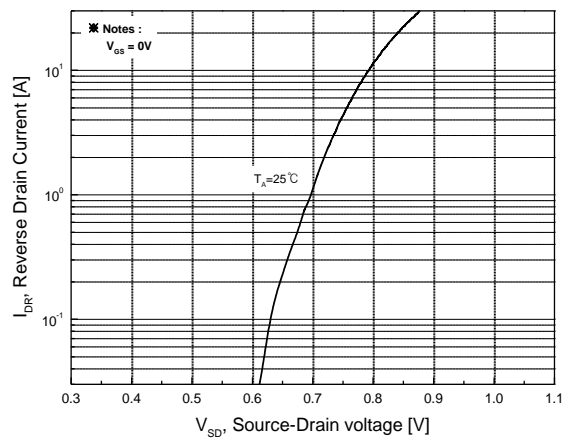


Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature

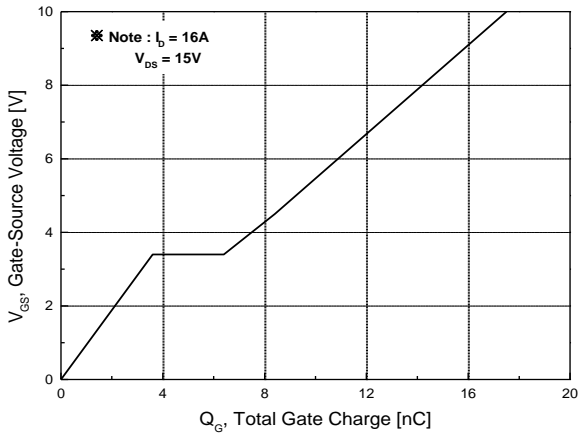


Fig.7 Gate Charge Characteristics

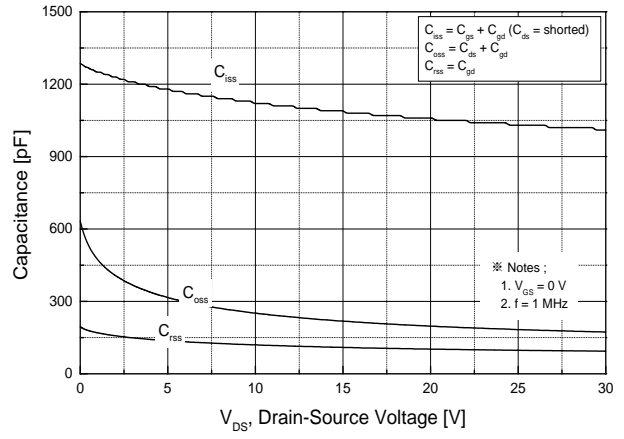


Fig.8 Capacitance Characteristics

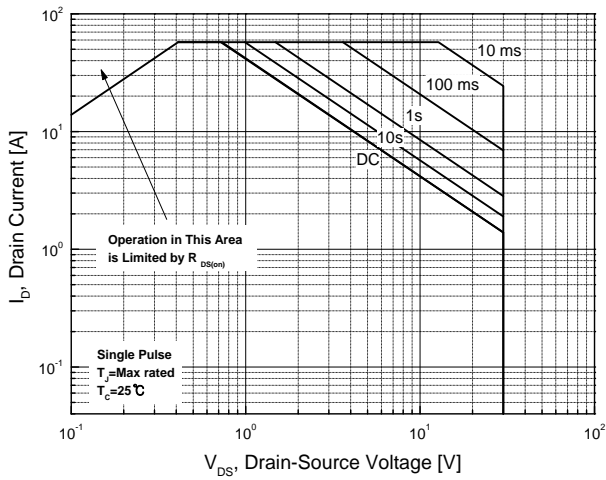


Fig.9 Maximum Safe Operating Area

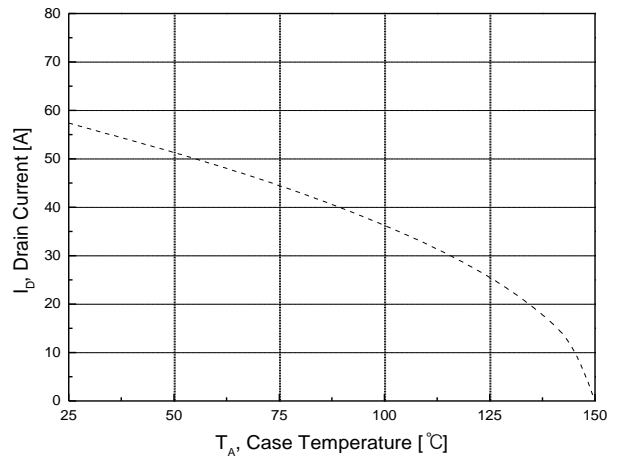


Fig.10 Maximum Drain Current vs. Case Temperature

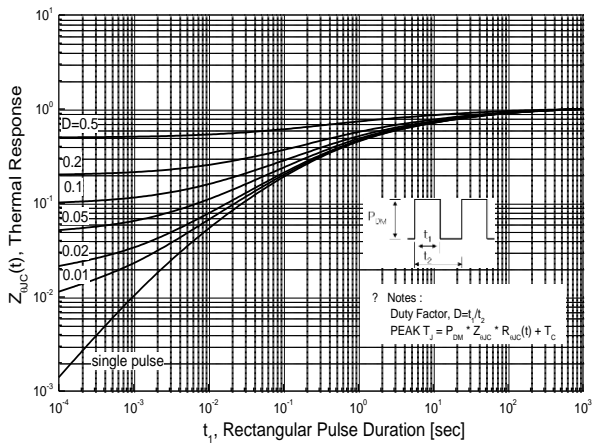


Fig.11 Transient Thermal Response Curve (Junction-to-Case)

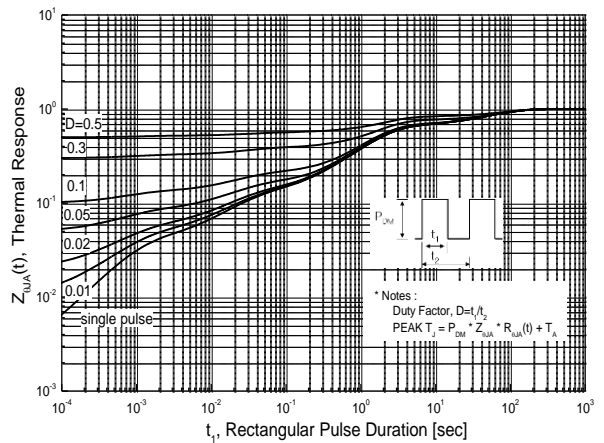
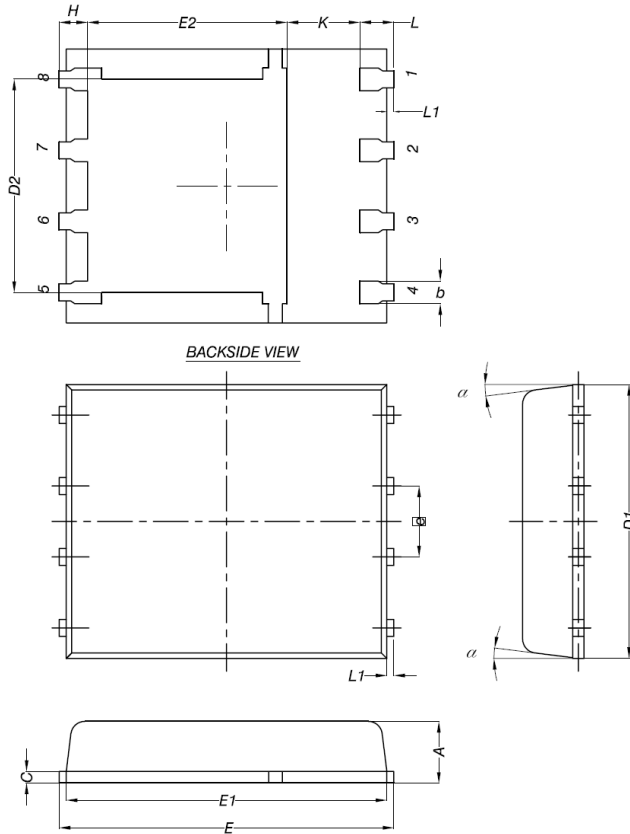


Fig.12 Transient Thermal Response Curve (Junction-to-Ambient)

Package Dimension

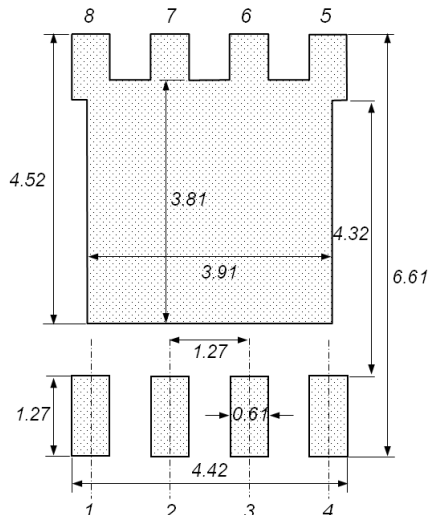
PowerDFN56 (5x6mm)

Dimensions are in millimeters, unless otherwise specified



Dimension	MILLIMETERS	
	Min	Max
A	0.90	1.10
b	0.33	0.51
C	0.20	0.34
D1	4.50	5.10
D2	-	4.22
E	5.90	6.30
E1	5.50	6.10
E2	-	4.30
e	1.27BSC	
H	0.41	0.71
K	0.20	-
L	0.51	0.71
α	0°	12°

Land Pattern



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.

MagnaChip reserves the right to change the specifications and circuitry without notice at any time. MagnaChip does not consider responsibility for use of any circuitry other than circuitry entirely included in a MagnaChip product. [MagnaChip](#) is a registered trademark of MagnaChip Semiconductor Ltd.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [Magnachip](#) manufacturer:

Other Similar products are found below :

[614233C](#) [648584F](#) [MCH3443-TL-E](#) [MCH6422-TL-E](#) [FDPF9N50NZ](#) [FW216A-TL-2W](#) [FW231A-TL-E](#) [APT5010JVR](#) [NTNS3A92PZT5G](#)
[IRF100S201](#) [JANTX2N5237](#) [2SK2464-TL-E](#) [2SK3818-DL-E](#) [FCA20N60_F109](#) [FDZ595PZ](#) [STD6600NT4G](#) [FSS804-TL-E](#) [2SJ277-DL-E](#)
[2SK1691-DL-E](#) [2SK2545\(Q,T\)](#) [D2294UK](#) [405094E](#) [423220D](#) [MCH6646-TL-E](#) [TPCC8103,L1Q\(CM](#) [367-8430-0972-503](#) [VN1206L](#)
[424134F](#) [026935X](#) [051075F](#) [SBVS138LT1G](#) [614234A](#) [715780A](#) [NTNS3166NZT5G](#) [751625C](#) [873612G](#) [IRF7380TRHR](#)
[IPS70R2K0CEAKMA1](#) [RJK60S3DPP-E0#T2](#) [RJK60S5DPK-M0#T0](#) [APT5010JVFR](#) [APT12031JFLL](#) [APT12040JVR](#) [DMN3404LQ-7](#)
[NTE6400](#) [JANTX2N6796U](#) [JANTX2N6784U](#) [JANTXV2N5416U4](#) [SQM110N05-06L-GE3](#) [SIHF35N60E-GE3](#)