MagnaChip

MDD1903

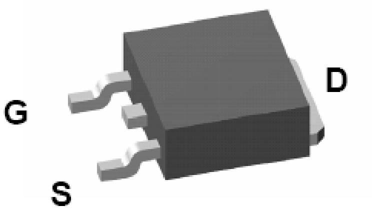
Single N-channel Trench MOSFET 100V, 11A, 120mΩ

General Description

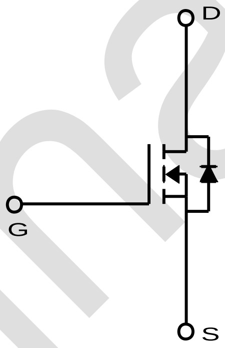
The MDD1903 uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDD1903 is suitable device for DC/DC Converters and general purpose applications.

Features

- V_{DS} = 100V
- I_D = 11A @V_{GS} = 10V
- $R_{DS(ON)}$
  < 120mΩ @V_{GS} = 10V
  < 135mΩ @V_{GS} = 6.0V



D-PAK
(TO-252)



Absolute Maximum Ratings (Tc = 25^{o}C)

Characteristics		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (1)	T_C=25^{o}C	I_D	11	A
	T_C=100^{o}C		7.3	A
Pulsed Drain Current		I_{DM}	30	A
Power Dissipation	T_C=25^{o}C	P_D	39	W
	T_C=100^{o}C		15	
Junction and Storage Temperature Range		T_J, T_{stg}	-55~150	^{o}C

Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	52	^{o}C/W
Thermal Resistance, Junction-to-Case (1)	$R_{\theta JC}$	3.2	

Ordering Information

Part Number	Temp. Range	Package	Packing	Rohs Status
MDD1903RH	-55~150°C	D-PAK	Tape & Reel	Halogen Free

Electrical Characteristics (Tc =25°C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250μA, V_{GS} = 0V	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	2.0	3.0	
Drain Cut-Off Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V	-	-	1	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 = 10A	-		120	mΩ
		V_{GS} = 6.0V, I_D = 10A	-		135	
Forward Transconductance	g_{fs}	V_{DS} = 10V, I_D = 10A	-	18	-	S
Dynamic Characteristics						
Total Gate Charge	Q_g	V_{DS} = 80V, I_D = 10A, V_{GS} = 10V	-	11.7	20	nC
Gate-Source Charge	Q_{gs}		-	1.6	-	
Gate-Drain Charge	Q_{gd}		-	5.3	-	
Input Capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	-	525	830	pF
Reverse Transfer Capacitance	C_{rss}		-	27	-	
Output Capacitance	C_{oss}		-	63	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=50V, V_{GS}=10V, R_L=5Ω, R_{GEN}=3.3Ω	-	8.4		ns
Rise Time	t_r		-	11.6		
Turn-Off Delay Time	$t_{d(off)}$		-	42.6		
Fall Time	t_f		-	16.6		
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 10A, V_{GS} = 0V	-	0.7	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = 10A, dl/dt = 100A/μs	-	50		ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	77		nC

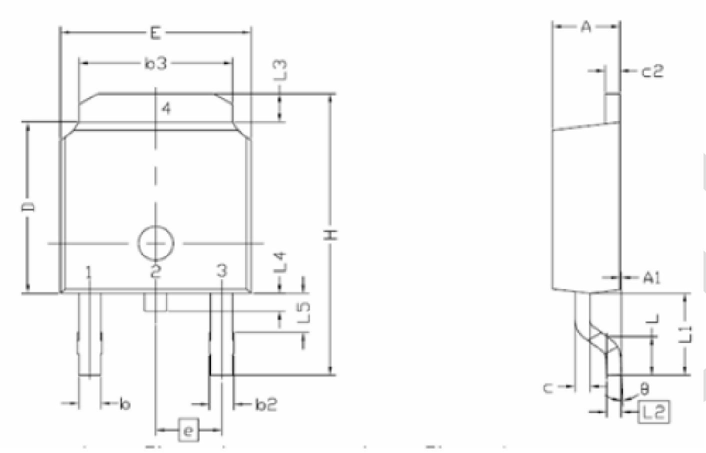
Note :

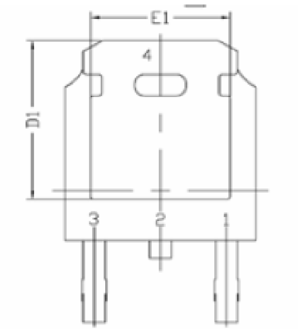
1. Surface mounted RF4 board with 2oz. Copper.

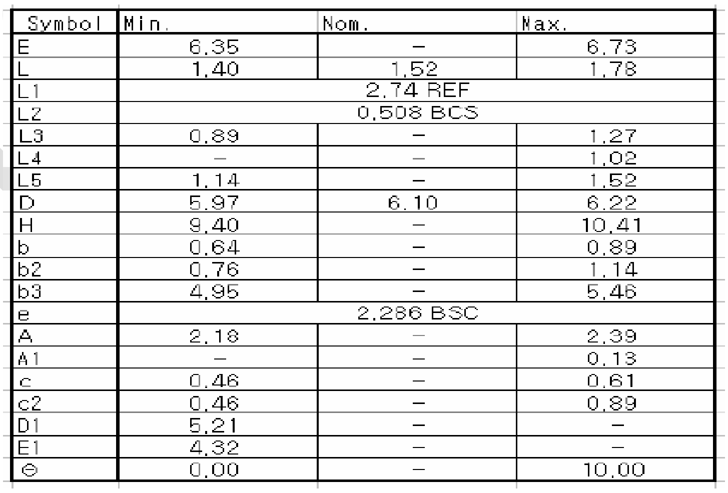
Package Dimension

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	–	–
θ	0.00	–	10.00

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.