

General Description

The MDW24D066EX uses advanced Magnachip's MOSFET Technology, which provides high performance in on-state resistance and excellent reliability. Excellent low $R_{DS(ON)}$, low gate charge operation and operation for Battery Application.

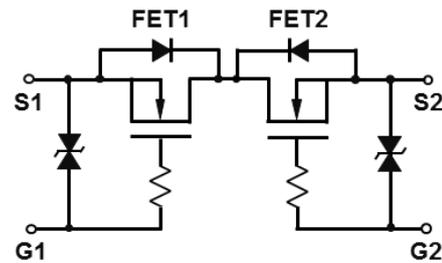
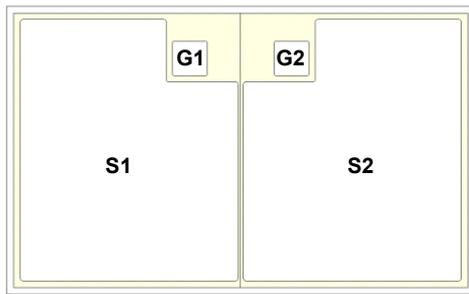
Features

- $V_{DS} = 24V$
- Drain - Source ON Resistance;
 - $R_{DS(ON)} < 6.6m\Omega @ V_{GS} = 3.9V$
 - $R_{DS(ON)} < 8.7m\Omega @ V_{GS} = 3.1V$

Applications

- Portable Battery Protection

Bottom View



Drain is the backside of the wafer (TOP View)

Absolute Maximum Ratings

Characteristics	Symbol	Ratings	Units
Drain-Source Voltage	V_{DSS}	24	V
Gate-Source Voltage	V_{GSS}	± 12	V
Junction and Storage Temperature Range	T_J, T_{stg}	-55~150	$^{\circ}C$

Mechanical Data

Contents	Value
Wafer Thickness	140 $\mu m \pm 10 \mu m$
Metal (Top)	Al (45,000 Å)
Metal (Back)	NiV (3,000 Å) – Ag (1,500 Å)
Passivation Layer	Yes
Die Size (With Scribe lane)	1,240 x 2,000 μm^2
Scribe lane width	60 μm
Gate Pad Size	150 x 150 μm^2

Electrical Characteristics (T_A =25°C unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250μA, V _{GS} = 0V	24	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.5	1.0	1.5	
Cut-Off Current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0V	-	-	1.0	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V	-	-	10	μA
Drain-Source Resistance ^{Note 1}	R _{DS(ON)}	V _{GS} = 3.9V, I _D = 5.0A	-	5.2	6.6	mΩ
		V _{GS} = 3.1V, I _D = 5.0A	-	6.2	8.7	
Dynamic Characteristics						
Total Gate Charge	Q _g	V _{DD} = 12V, I _D = 5.0A, V _{GS} = 3.9V	-	16.5	-	nC
Gate-Source Charge	Q _{gs}		-	2.4	-	
Gate-Drain Charge	Q _{gd}		-	9.8	-	
Input Capacitance	C _{iss}	V _{DS} = 12V, V _{GS} = 0V, f = 50kHz	-	1680	-	pF
Reverse Transfer Capacitance	C _{rss}		-	418	-	
Output Capacitance	C _{oss}		-	459	-	
Turn-On Delay Time	t _{d(on)}	V _{GS} = 3.9V, V _{DD} = 12V, I _D = 5.0A, R _G = 3Ω	-	0.04	-	μs
Rise Time	t _r		-	0.20	-	
Turn-Off Delay Time	t _{d(off)}		-	1.67	-	
Fall Time	t _f		-	4.91	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 5A, V _{GS} = 0V		0.75	1.0	V

Notes :

1. R_{DS(ON)} is the value for Single MOS.
2. Dynamic Characteristics are tested on STEP-4L Package.

Characteristic Graph

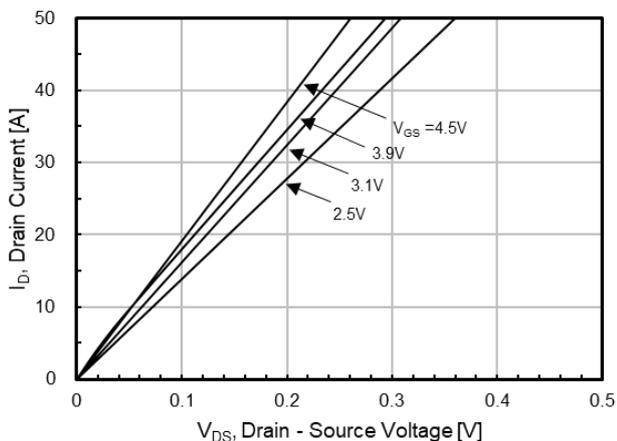


Fig.1 On-Region Characteristics

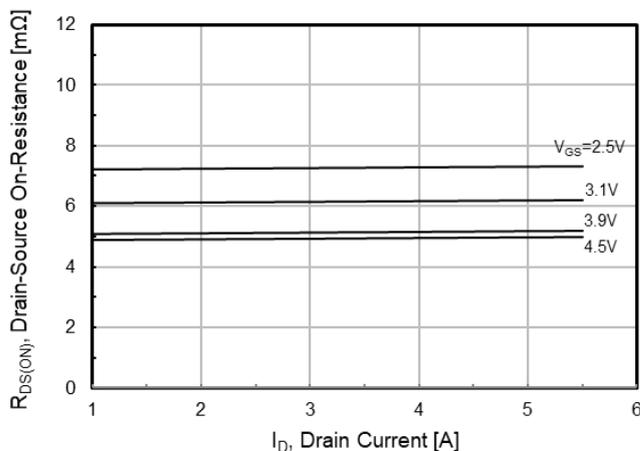


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

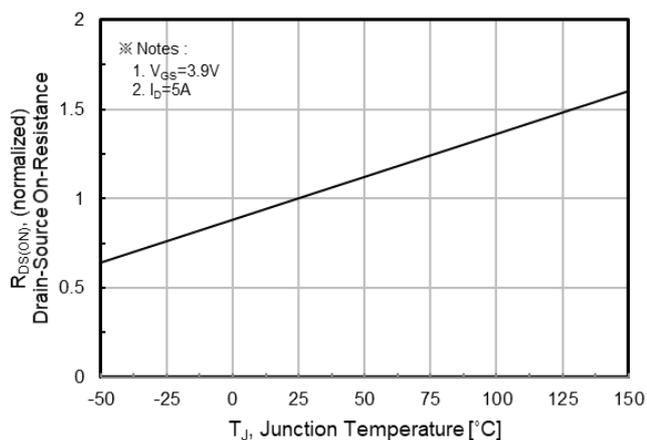


Fig.3 On-Resistance Variation with Temperature

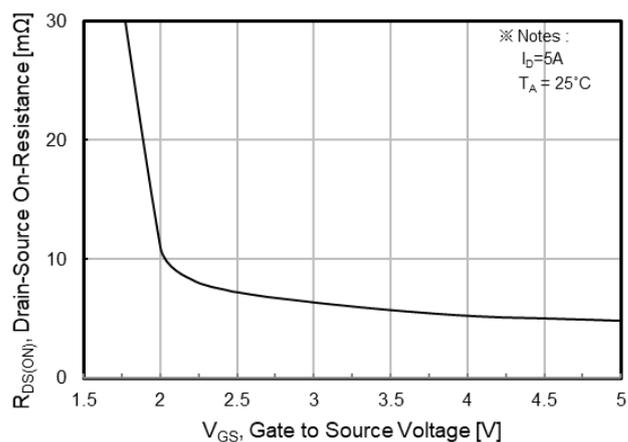


Fig.4 On-Resistance Variation with Gate to Source Voltage

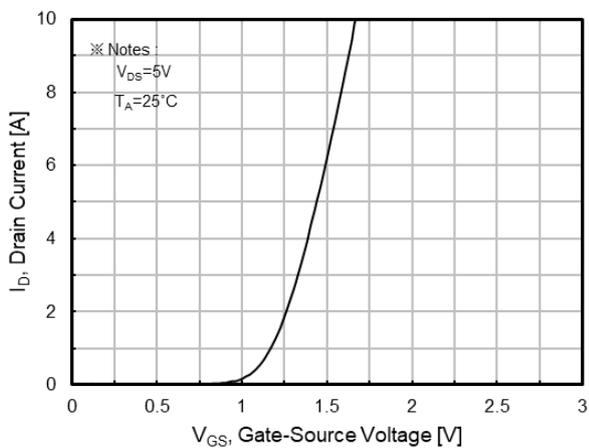


Fig.5 Transfer Characteristics

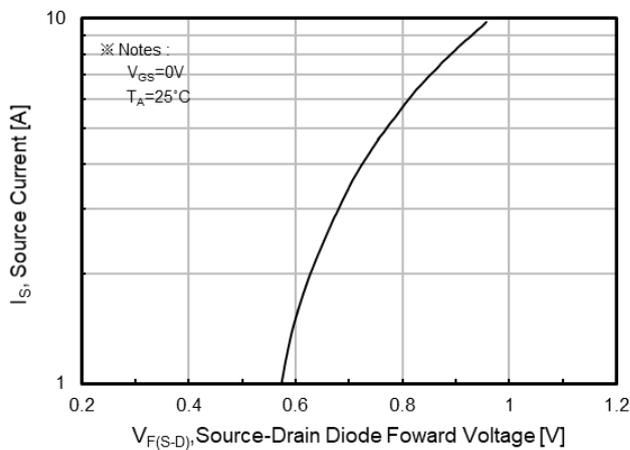


Fig.6 Body Diode Forward Voltage Variation with Source Current

Characteristic Graph

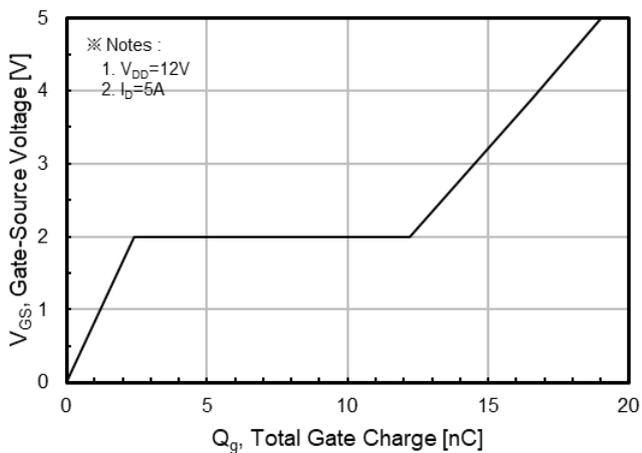


Fig.7 Gate Charge Characteristics

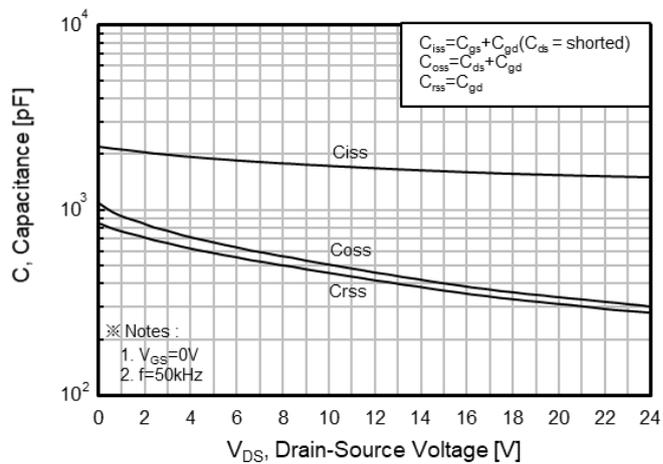
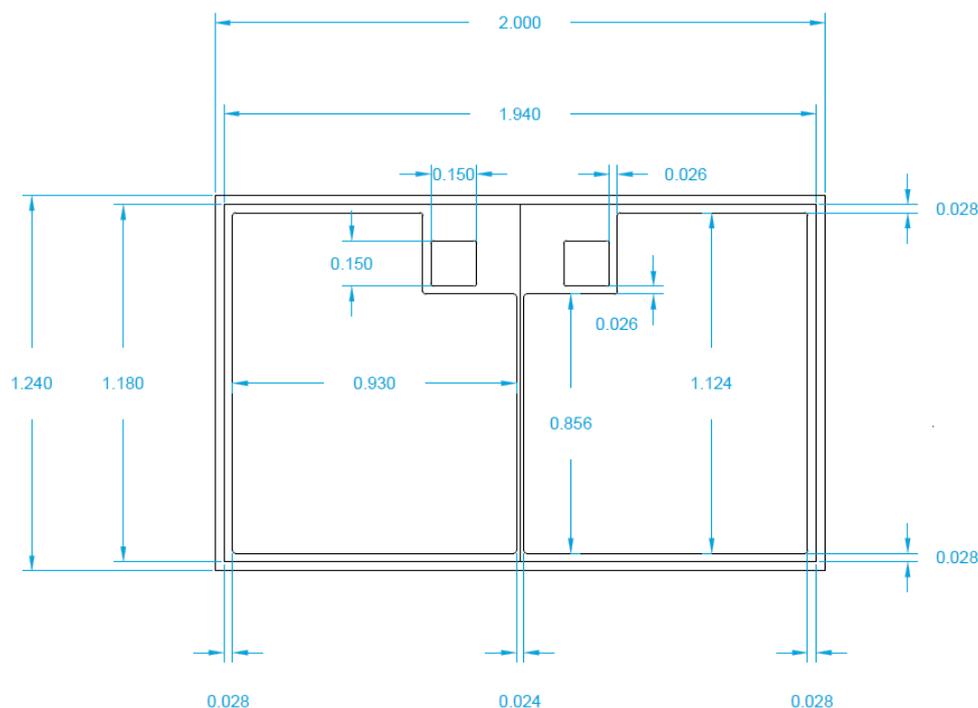


Fig.8 Capacitance Characteristics

DIE OUTLINE (Unit : mm)**DISCLAIMER:**

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