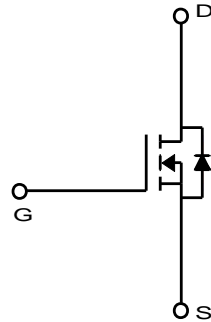
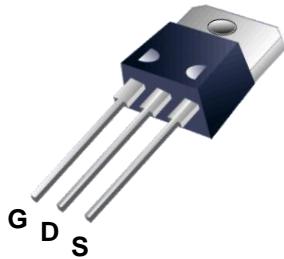


### General Description

The MDP1901 uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDP1901 is suitable device for DC/DC Converters and general purpose applications.

### Features

- $V_{DS} = 100V$
- $I_D = 36A$  @  $V_{GS} = 10V$
- $R_{DS(ON)} < 22m\Omega$  @  $V_{GS} = 10V$   
 $< 25m\Omega$  @  $V_{GS} = 6.0V$



### Absolute Maximum Ratings (Tc = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DSS}$	100	V
Gate-Source Voltage	$V_{GSS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	36
		$T_C=100^\circ C$	24
Pulsed Drain Current	$I_{DM}$	144	A
Power Dissipation	$P_D$	$T_C=25^\circ C$	34
		$T_C=100^\circ C$	14
Single Pulse Avalanche Energy <sup>(2)</sup>	$E_{AS}$	200	mJ
Junction and Storage Temperature Range	$T_J, T_{stg}$	-55~150	°C

### Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.3	

## Ordering Information

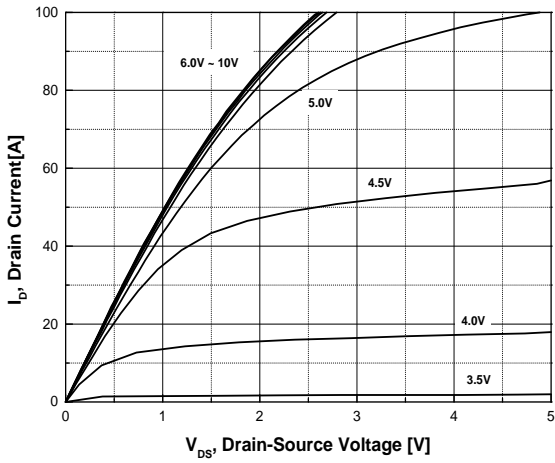
Part Number	Temp. Range	Package	Packing	Rohs Status
MDP1901TH	-55~150°C	TO-220	Tube	Halogen Free

## Electrical Characteristics (Tc =25°C)

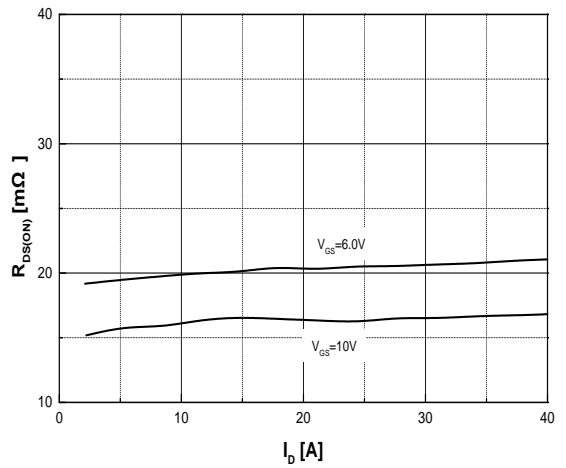
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D = 250\mu A, V_{GS} = 0V$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	2.8	4.0	
Drain Cut-Off Current	$I_{DSS}$	$V_{DS} = 80V, V_{GS} = 0V$	-	-	1	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 0.1$	
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 35A$	-	17	22	m $\Omega$
		$T_J = 125^\circ C$	-	28	33	
		$V_{GS} = 6.0V, I_D = 20A$		19	25	
Forward Transconductance	$g_{fs}$	$V_{DS} = 5V, I_D = 35A$	-	35	-	S
<b>Dynamic Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 50V, I_D = 20A, V_{GS} = 10V$	-	75	110	nC
Gate-Source Charge	$Q_{gs}$		-	20	-	
Gate-Drain Charge	$Q_{gd}$		-	18	-	
Input Capacitance	$C_{iss}$	$V_{DS} = 30V, V_{GS} = 0V, f = 1.0MHz$	-	3045	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	160	-	
Output Capacitance	$C_{oss}$		-	234	-	
Gate Resistance	$R_g$	$V_{GS} = 0V, V_{DS} = 0V, F = 1MHz$	-	0.81	-	$\Omega$
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 50V, R_L = 30\Omega, R_G = 6\Omega$	-	25	40	ns
Rise Time	$t_r$		-	12	20	
Turn-Off Delay Time	$t_{d(off)}$		-	70	120	
Fall Time	$t_f$		-	20	35	
<b>Drain-Source Body Diode Characteristics</b>						
Source-Drain Diode Forward Voltage	$V_{SD}$	$I_S = 1A, V_{GS} = 0V$	-	0.7	1.2	V
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F = 20A, di/dt = 100A/\mu s$	-	70	100	ns
Body Diode Reverse Recovery Charge	$Q_{rr}$		-	240	-	nC

Note :

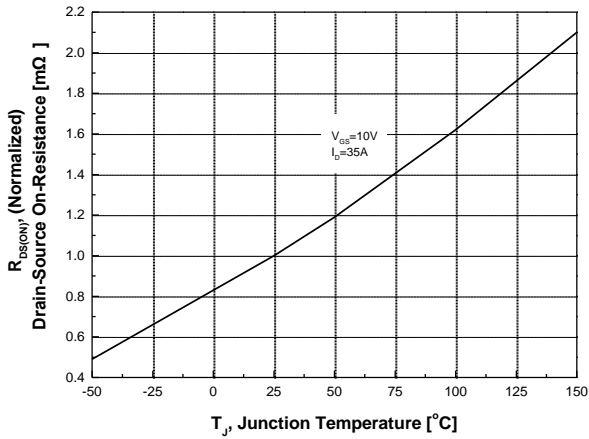
1. Surface mounted RF4 board with 2oz. Copper.
2. Starting  $T_J = 25^\circ C, L = 1mH, I_{AS} = 20A, V_{DD} = 50V, V_{GS} = 10V$



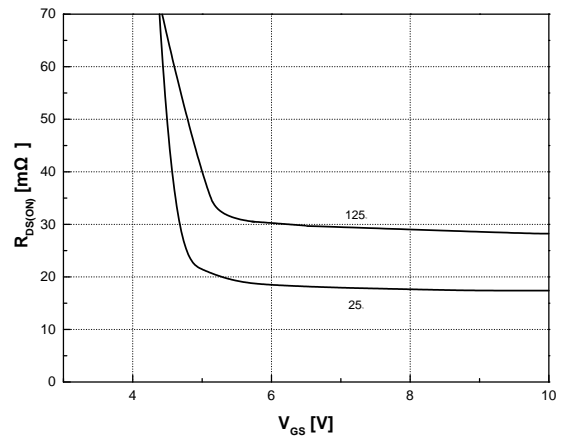
**Fig.1 On-Region Characteristics**



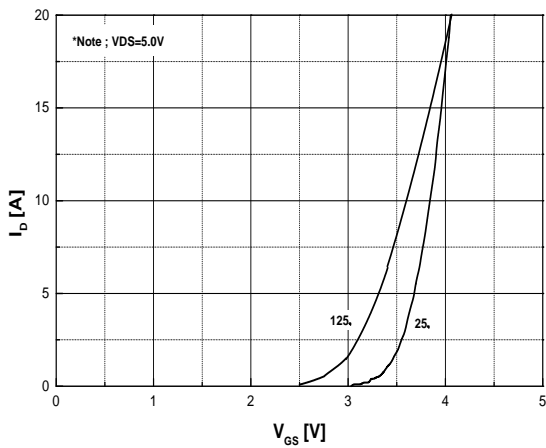
**Fig.2 On-Resistance Variation with Drain Current and Gate Voltage**



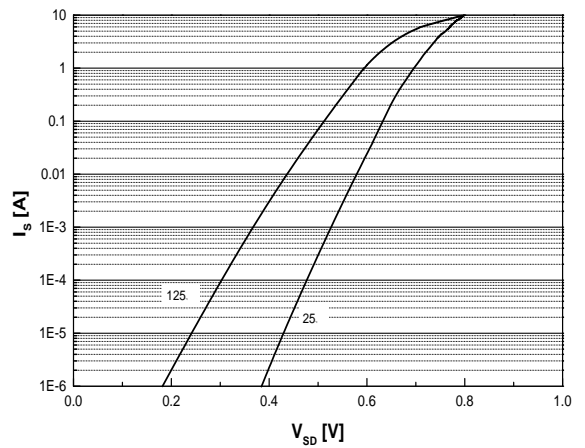
**Fig.3 On-Resistance Variation with Temperature**



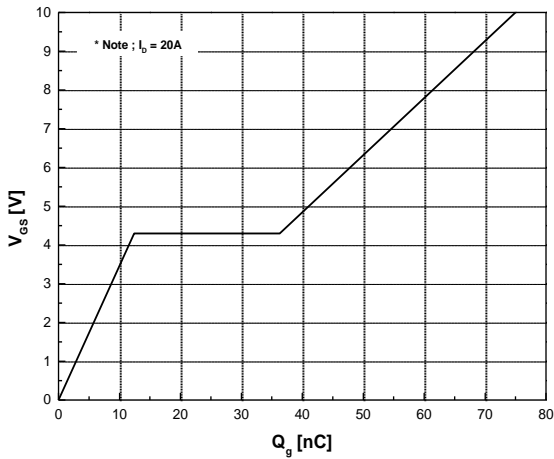
**Fig.4 On-Resistance Variation with Gate to Source Voltage**



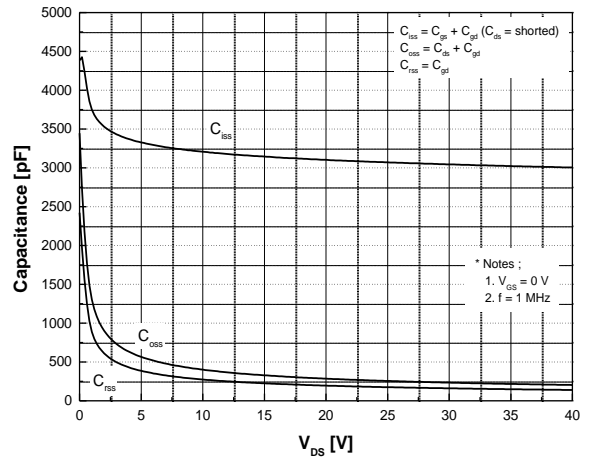
**Fig.5 Transfer Characteristics**



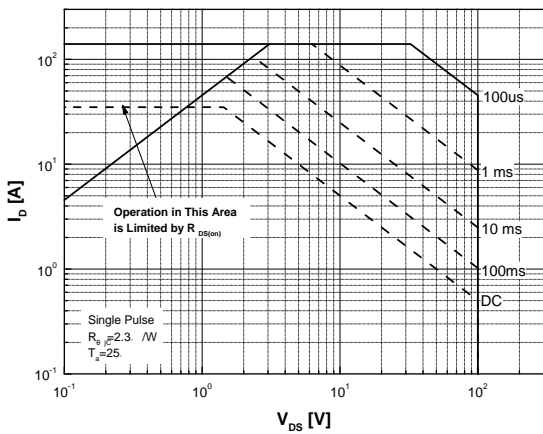
**Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature**



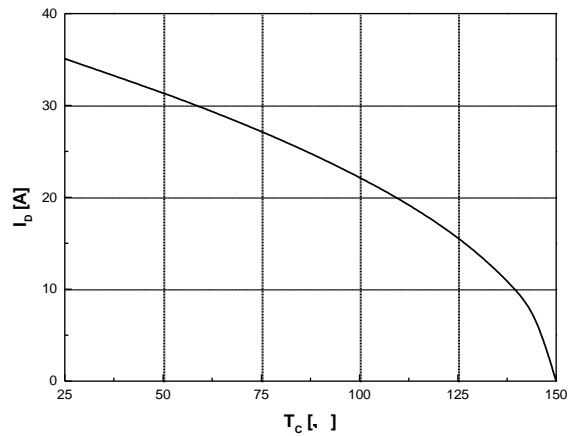
**Fig.7 Gate Charge Characteristics**



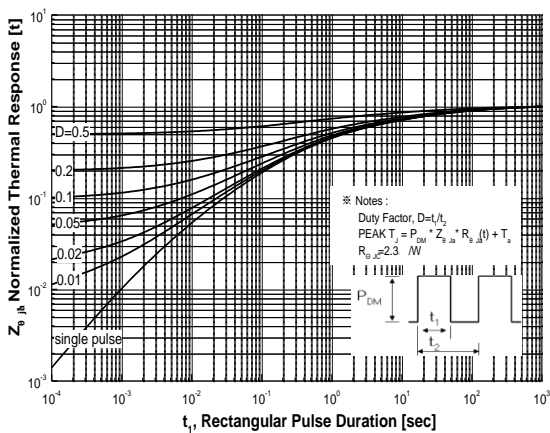
**Fig.8 Capacitance Characteristics**



**Fig.9 Maximum Safe Operating Area**



**Fig.10 Maximum Drain Current vs. Case Temperature**

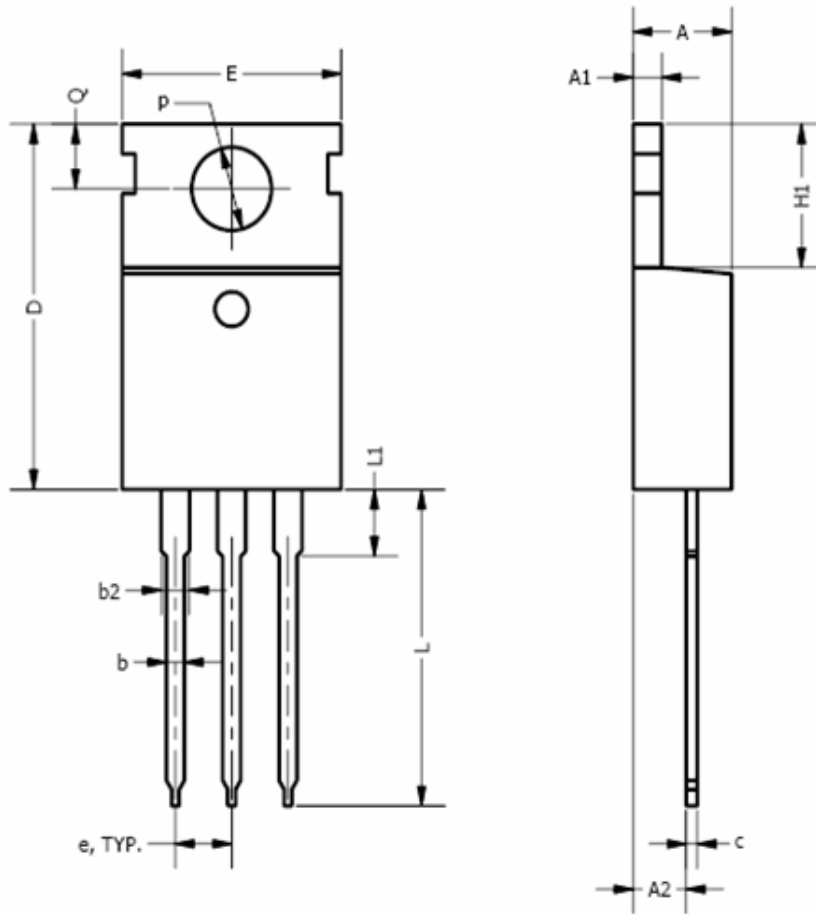


**Fig.11 Transient Thermal Response Curve**

**Physical Dimensions**

**3 Leads, TO-220**

Dimensions are in millimeters unless otherwise specified



Symbol	Min	Nom	Max
A	3.56		4.83
A1	0.50		1.40
A2	2.03		2.92
b	0.38	0.69	1.02
b2	1.14	1.45	1.78
c	0.36		0.61
D	14.22		16.51
e	2.54 TYP		
E	9.65		10.67
H1	5.84		6.86
L	12.70		14.73
L1			6.35
$\phi P$	3.53		4.09
Q	2.54		3.43

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