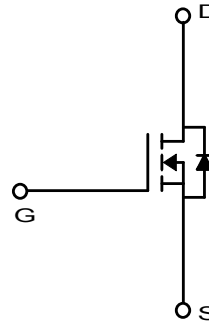
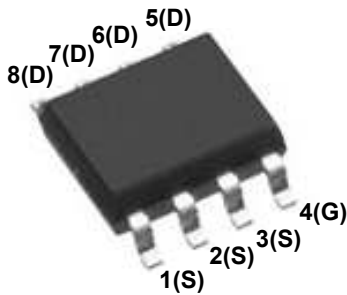


General Description

The MDS1524 uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDS1524 is suitable for DC/DC converter and general purpose applications.

Features

- $V_{DS} = 30V$
- $I_D = 19.3A @ V_{GS} = 10V$
- $R_{DS(ON)} < 8.1m\Omega @ V_{GS} = 10V$
 $< 11.6m\Omega @ V_{GS} = 4.5V$
- 100% UIL Tested
- 100% Rg Tested



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⁾	$T_C=25^\circ C$	I_D	19.3	A
	$T_C=70^\circ C$		15.4	
	$T_A=25^\circ C$		13.2 ⁽³⁾	
	$T_A=70^\circ C$		10.6 ⁽³⁾	
Pulsed Drain Current		I_{DM}	40	A
Power Dissipation	$T_C=25^\circ C$	P_D	5.3	W
	$T_C=70^\circ C$		3.4	
	$T_A=25^\circ C$		2.5 ⁽³⁾	
	$T_A=70^\circ C$		1.6 ⁽³⁾	
Single Pulse Avalanche Energy ⁽²⁾		E_{AS}	60	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⁾	$R_{\theta JA}$	50	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	23.2	

Ordering Information

Part Number	Temp. Range	Package	Packing	Quantity	Rohs Status
MDS1524URH	-55~150°C	SOIC-8	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 = 250μA, V _{GS} = 0V	30	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.3	1.9	2.7	
Drain Cut-Off Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V T _J =55°C	-	-	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 T _J =125°C	-	7.0	8.1	mΩ
		V _{GS} = 4.5V, I _D = 8A	-	9.7	11.6	
Forward Transconductance	g _{fs}	V _{DS} = 5V, I _D = 10A	-	29	-	S
Dynamic Characteristics						
Total Gate Charge	Q _{g(10V)}	V _{DS} = 15.0V, I _D = 10A, V _{GS} = 10V	11.4	16.2	21.1	nC
Total Gate Charge	Q _{g(4.5V)}		5.5	7.8	10.1	
Gate-Source Charge	Q _{gs}		-	3.1	-	
Gate-Drain Charge	Q _{gd}		-	2.7	-	
Input Capacitance	C _{iss}	V _{DS} = 15.0V, V _{GS} = 0V, f = 1.0MHz	712	1017	1322	pF
Reverse Transfer Capacitance	C _{rss}		71	101	131	
Output Capacitance	C _{oss}		143	205	266	
Turn-On Delay Time	t _{d(on)}	V _{GS} = 10V, V _{DS} = 15.0V, I _D = 10A, R _G = 3.0Ω	-	7.2	-	ns
Rise Time	t _r		-	4.7	-	
Turn-Off Delay Time	t _{d(off)}		-	25.4	-	
Fall Time	t _f		-	6.1	-	
Gate Resistance	R _g	f=1 MHz	0.5	1.1	3.0	Ω
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 10A, V _{GS} = 0V	-	0.82	1.1	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 10A, di/dt = 100A/μs	-	20.7	31.1	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	11.4	17.1	nC

Note :

- Surface mounted FR-4 board by JEDEC (jesd51-7)
- E_{AS} is tested at starting T_J = 25°C, L = 0.1mH, I_{AS} = 19.2A, V_{DD} = 27V, V_{GS} = 10V.
- T < 10sec

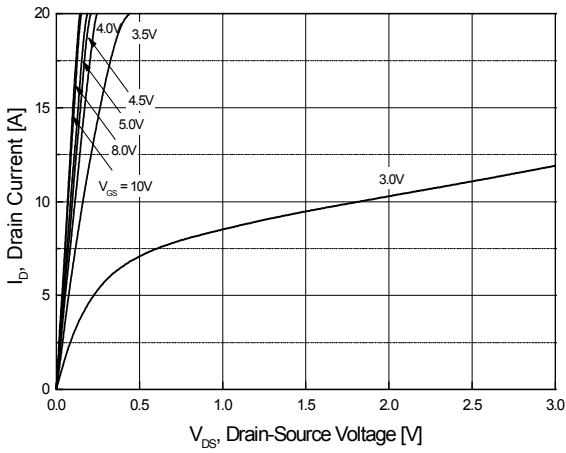


Fig.1 On-Region Characteristics

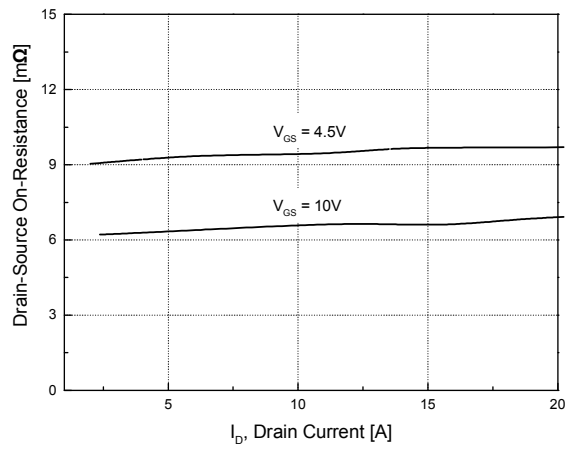


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

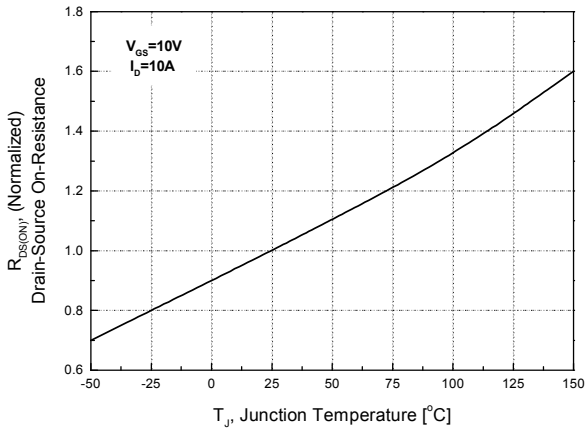


Fig.3 On-Resistance Variation with Temperature

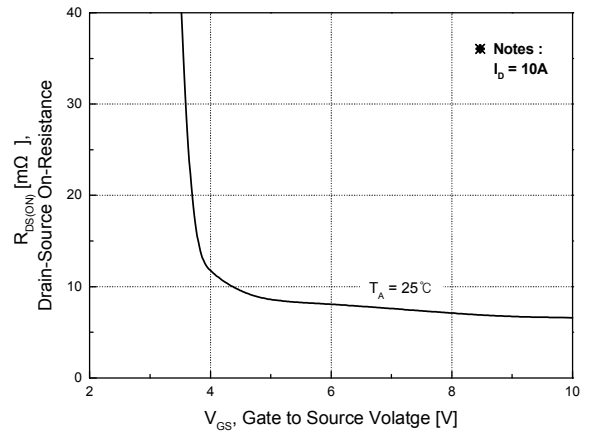


Fig.4 On-Resistance Variation with Gate to Source Voltage

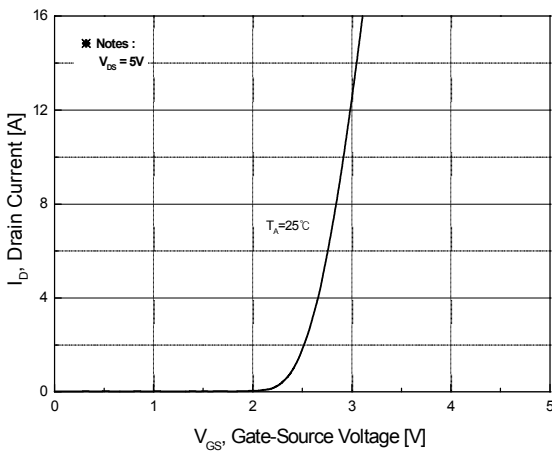


Fig.5 Transfer Characteristics

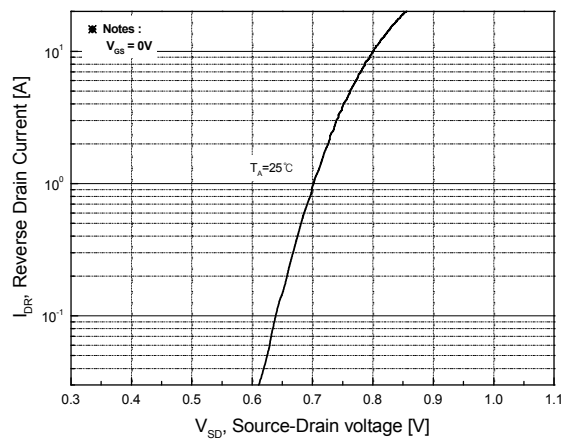
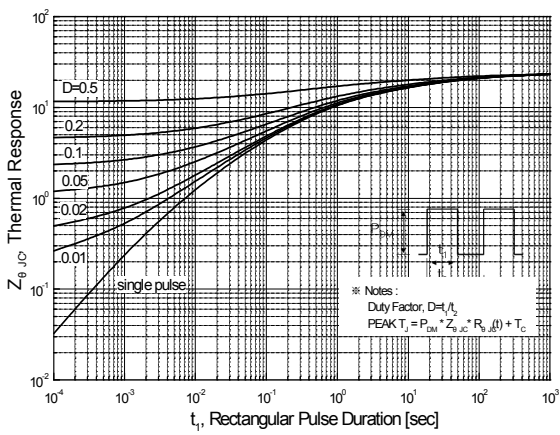
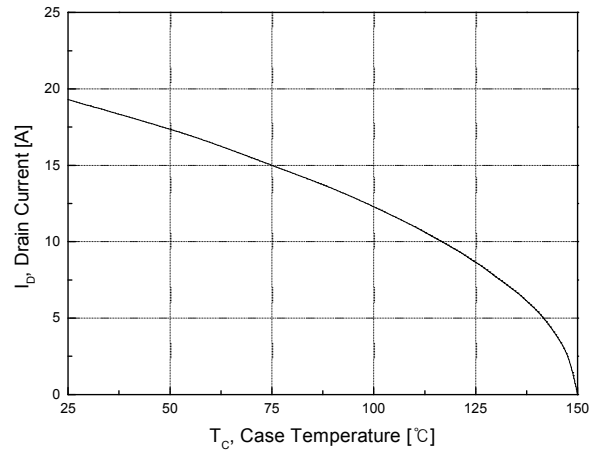
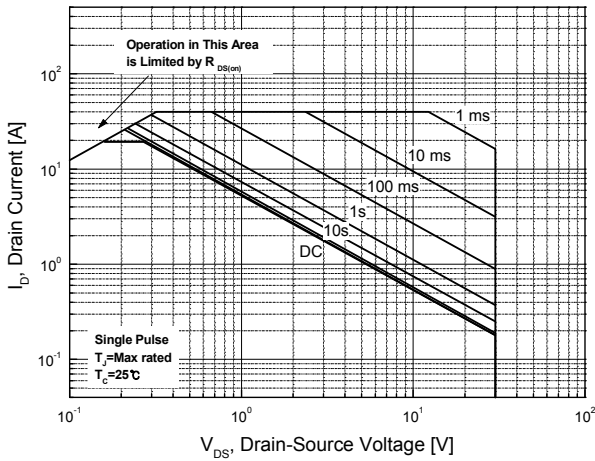
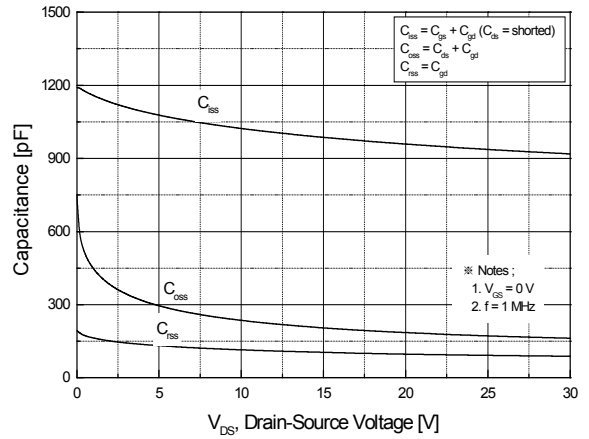
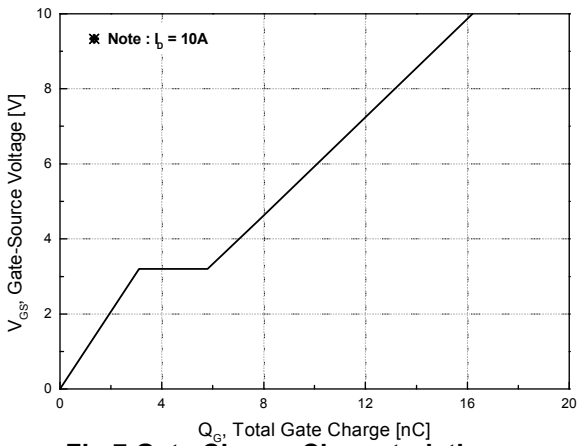


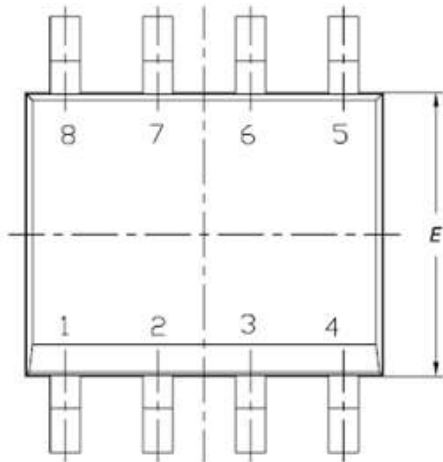
Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature



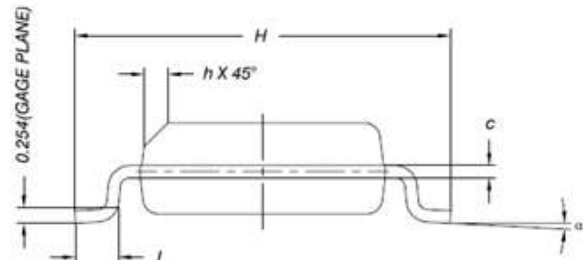
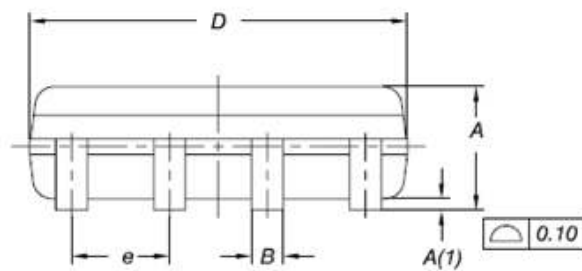
Physical Dimensions

8 Leads, SOIC

Dimensions are in millimeters unless otherwise specified



Symbol	Min	Nom	Max
A	-	-	1.75
A(1)	0.10	-	0.25
B	0.31	-	0.51
C	0.10	-	0.25
D	4.9 BSC		
E	3.9 BSC		
e	1.27 BSC		
H	6.0 BSC		
L	0.40	-	1.27
a	0	-	8
h	0.250	-	0.500
L2(Gage plane)	0.25 BSC		



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