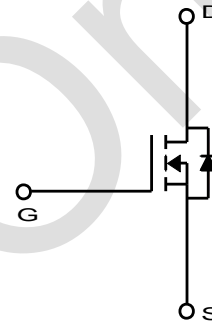
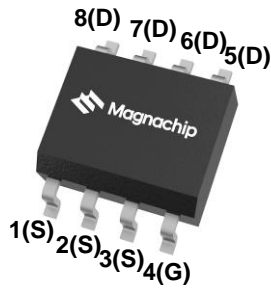


### General Description

The MDS1528 uses advanced Magnachip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDS1528 is suitable for DC/DC converter and general purpose applications.

### Features

- $V_{DS} = 30V$
- $I_D = 11.9A$  @  $V_{GS} = 10V$
- $R_{DS(ON)} < 18.8m\Omega$  @  $V_{GS} = 10V$   
 $< 27.8m\Omega$  @  $V_{GS} = 4.5V$
- 100% UIL Tested
- 100% Rg Tested



### Absolute Maximum Ratings ( $T_a = 25^\circ C$ )

Characteristics	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current <sup>(1)</sup>	$I_D$	$T_C=25^\circ C$	11.9
		$T_C=70^\circ C$	9.5
		$T_A=25^\circ C$	8.7 <sup>(3)</sup>
		$T_A=70^\circ C$	6.9 <sup>(3)</sup>
Pulsed Drain Current	$I_{DM}$	40	A
Power Dissipation	$P_D$	$T_C=25^\circ C$	4.7
		$T_C=70^\circ C$	3.0
		$T_A=25^\circ C$	2.5 <sup>(3)</sup>
		$T_A=70^\circ C$	1.6 <sup>(3)</sup>
Single Pulse Avalanche Energy <sup>(2)</sup>	$E_{AS}$	20	mJ
Junction and Storage Temperature Range	$T_J, T_{stg}$	-55~150	$^\circ C$

### Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient <sup>(1)</sup>	$R_{\theta JA}$	50	$^\circ C/W$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	26.4	

## Ordering Information

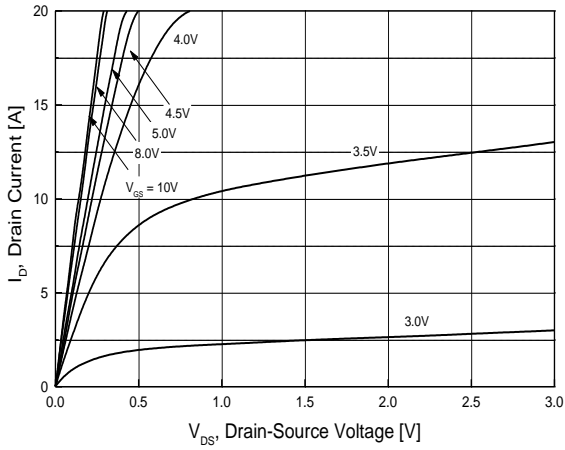
Part Number	Temp. Range	Package	Packing	Quantity	Rohs Status
MDS1528URH	-55~150°C	SOIC-8	Tape & Reel	3000 units	Halogen Free

## Electrical Characteristics (T<sub>J</sub> = 25°C)

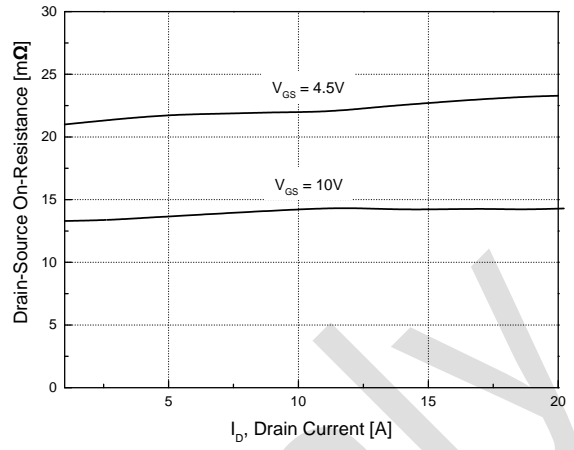
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V	30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.3	1.9	2.7	
Drain Cut-Off Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V T <sub>J</sub> =55°C	-	-	1 5	μA
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±0.1	
Drain-Source ON Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 6A T <sub>J</sub> =125°C	-	16.3 23.6	18.8 27.3	mΩ
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 6A	-	20	-	S
<b>Dynamic Characteristics</b>						
Total Gate Charge	Q <sub>g(10V)</sub>	V <sub>DS</sub> = 15.0V, I <sub>D</sub> = 6A, V <sub>GS</sub> = 10V	5.1	7.3	9.5	nC
Total Gate Charge	Q <sub>g(4.5V)</sub>		2.5	3.6	4.6	
Gate-Source Charge	Q <sub>gs</sub>		-	1.6	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	1.3	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15.0V, V <sub>GS</sub> = 0V, f = 1.0MHz	317	453	589	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		30	43	56	
Output Capacitance	C <sub>oss</sub>		62	88	115	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15.0V, I <sub>D</sub> = 6A, R <sub>G</sub> = 3.0Ω	-	5.5	-	ns
Rise Time	t <sub>r</sub>		-	3.1	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	14.0	-	
Fall Time	t <sub>f</sub>		-	2.8	-	
Gate Resistance	R <sub>g</sub>	f=1 MHz	1.0	3.0	4.0	Ω
<b>Drain-Source Body Diode Characteristics</b>						
Source-Drain Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 6A, V <sub>GS</sub> = 0V	-	0.84	1.1	V
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 6A, di/dt = 100A/μs	-	15.9	23.8	ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>		-	8.7	13.1	nC

Note :

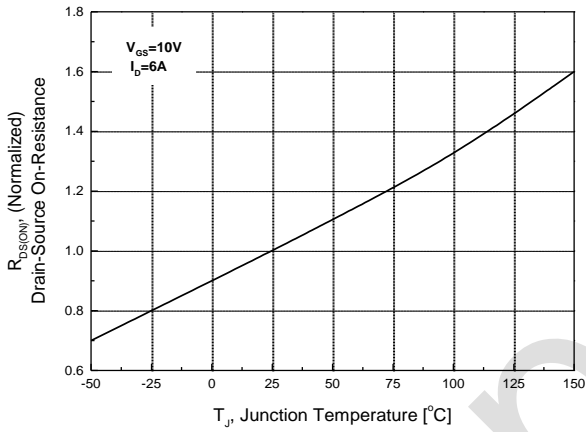
- Surface mounted FR-4 board by JEDEC (jesd51-7)
- E<sub>AS</sub> is tested at starting T<sub>J</sub> = 25°C, L = 0.1mH, I<sub>AS</sub> = 10.8A, V<sub>DD</sub> = 27V, V<sub>GS</sub> = 10V
- T < 10sec



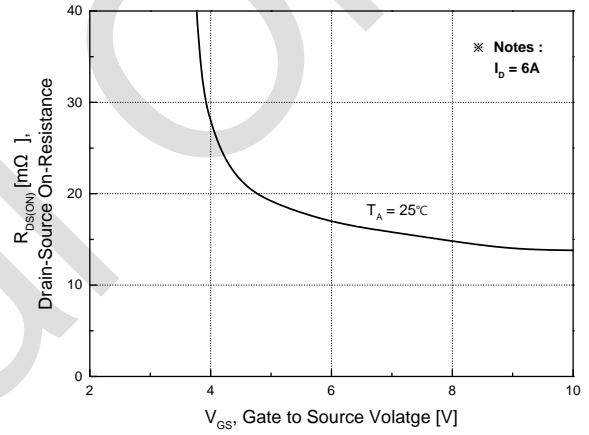
**Fig.1 On-Region Characteristics**



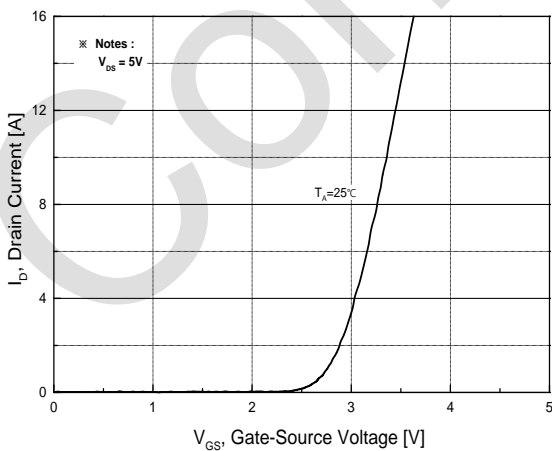
**Fig.2 On-Resistance Variation with Drain Current and Gate Voltage**



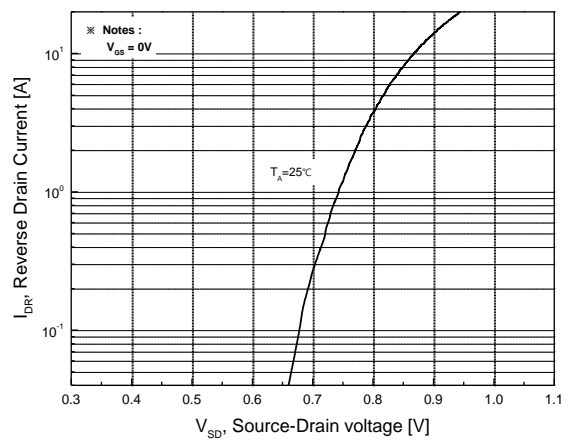
**Fig.3 On-Resistance Variation with Temperature**



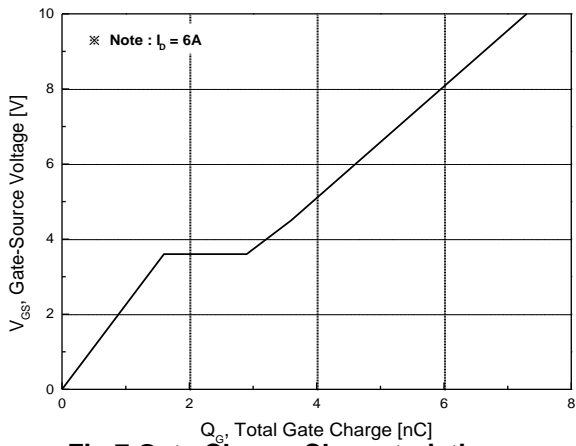
**Fig.4 On-Resistance Variation with Gate to Source Voltage**



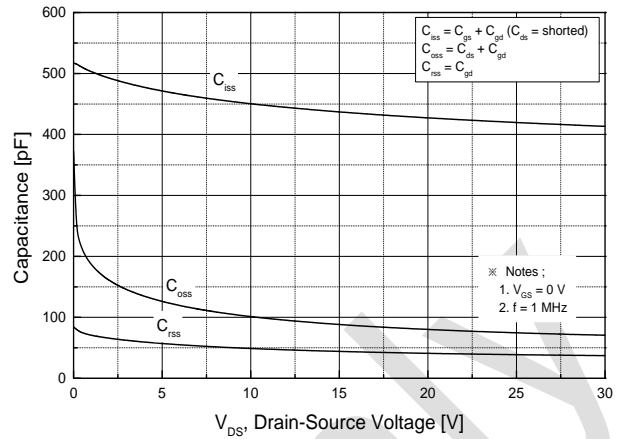
**Fig.5 Transfer Characteristics**



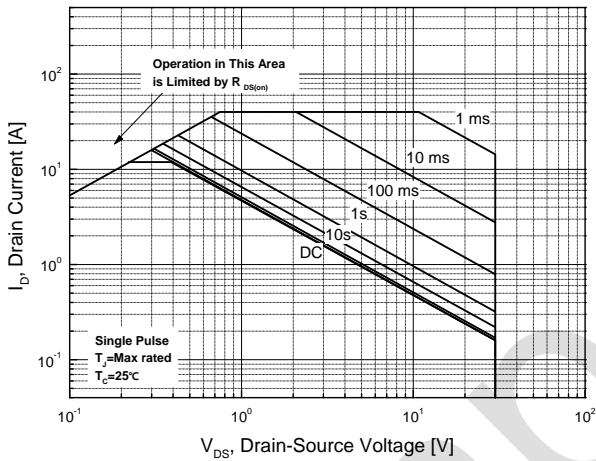
**Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature**



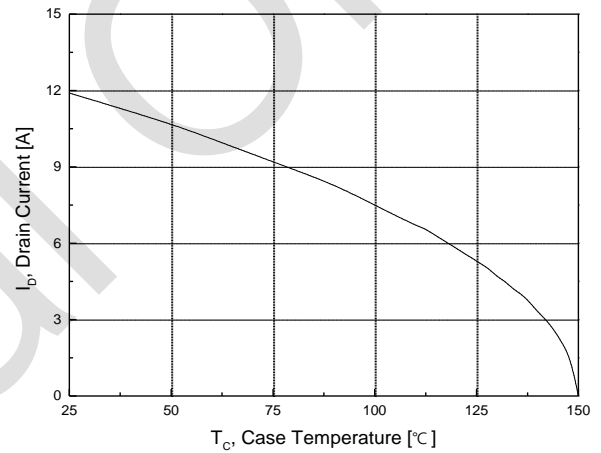
**Fig.7 Gate Charge Characteristics**



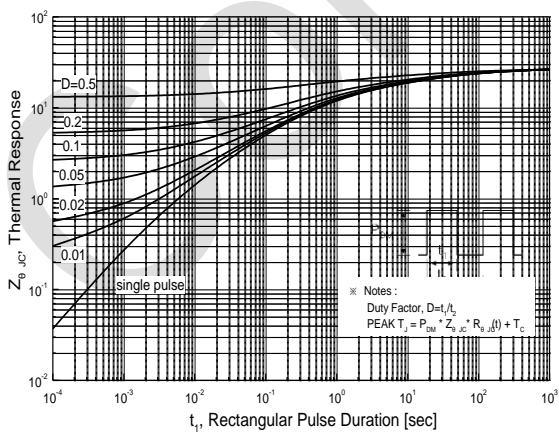
**Fig.8 Capacitance Characteristics**



**Fig.9 Maximum Safe Operating Area**



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

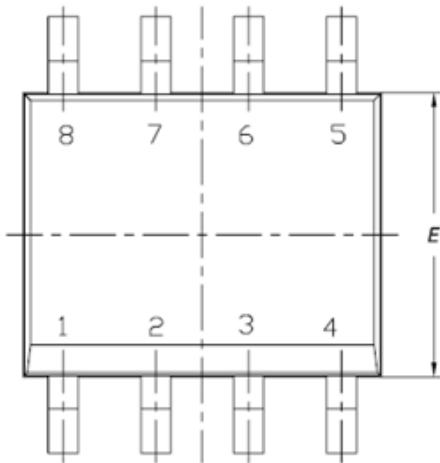


**Fig.11 Transient Thermal Response Curve**

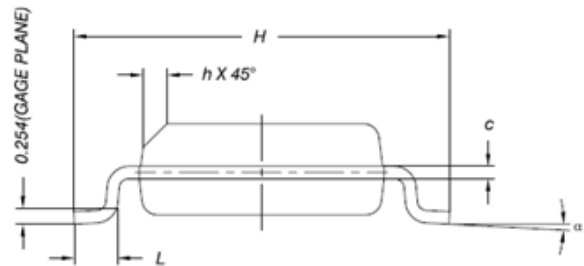
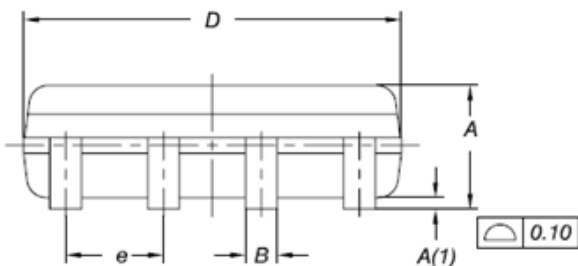
## Physical Dimensions

### SOIC-8L

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		



Note : Package body size, length and width do not include mold flash, protrusions and gate burrs.

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