

# MDV1529E

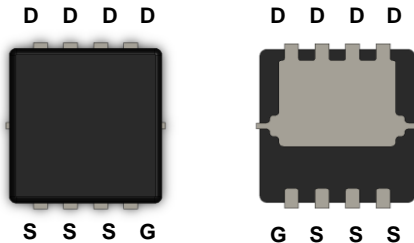
## Single N-channel Trench MOSFET 30V, 28A, 4.5mΩ

### General Description

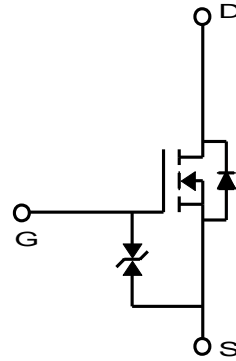
The MDV1529E uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDV1529E is suitable for DC/DC converter and general purpose applications.

### Features

- $V_{DS} = 32V$
- $I_D = 28A @ V_{GS} = 10V$
- $R_{DS(ON)} < 4.5m\Omega @ V_{GS} = 10V$   
 $< 6.5m\Omega @ V_{GS} = 4.5V$



PDFN33



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

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>	$T_C = 25^\circ C$ (Silicon limited)	$I_D$	56.4	A
	$T_C = 25^\circ C$ (Package limited)		28	
	$T_C = 70^\circ C$		28	
Pulsed Drain Current		$I_{DM}$	84	A
Power Dissipation	$T_C = 25^\circ C$	$P_D$	27.7	W
	$T_C = 70^\circ C$		17.7	
Single Pulse Avalanche Energy <sup>(2)</sup>		$E_{AS}$	136	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>	$R_{\theta JA}$	36	$^\circ C/W$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.5	

## Ordering Information

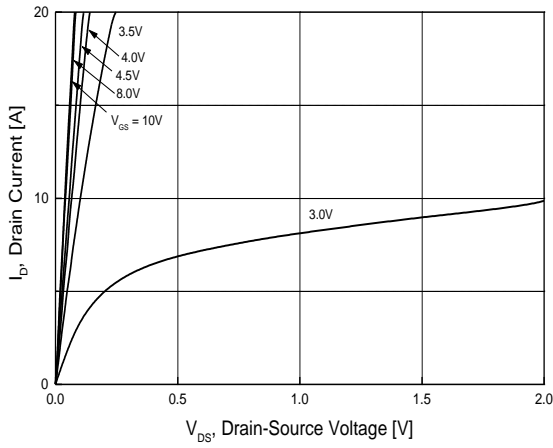
Part Number	Temp. Range	Package	Packing	Quantity	RoHS Status
MDV1529EURH	-55~150°C	PDFN33	Tape & Reel	5000 units	Halogen Free

## Electrical Characteristics (Ta = 25°C unless otherwise specified)

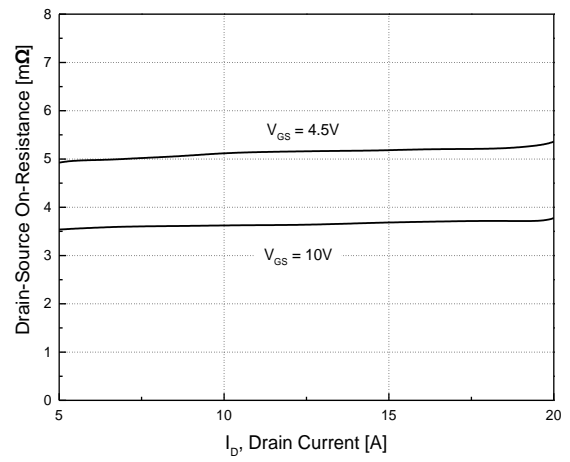
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D = 250\mu A, V_{GS} = 0V$	32	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.9	2.7	
Drain Cut-Off Current	$I_{DSS}$	$V_{DS} = 32V, V_{GS} = 0V$	-	-	10	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16V, V_{DS} = 0V$	-	-	$\pm 10$	
Drain-Source ON Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 16A$	-	3.7	4.5	m $\Omega$
		$V_{GS} = 4.5V, I_D = 13A$	-	5.2	6.5	
<b>Dynamic Characteristics</b>						
Total Gate Charge	$Q_{g(10V)}$	$V_{DS} = 15.0V, I_D = 16A, V_{GS} = 10V$	-	44.0	-	nC
Total Gate Charge	$Q_{g(4.5V)}$		-	22.5	-	
Gate-Source Charge	$Q_{gs}$		-	7.0	-	
Gate-Drain Charge	$Q_{gd}$		-	11.0	-	
Input Capacitance	$C_{iss}$	$V_{DS} = 15.0V, V_{GS} = 0V, f = 1.0MHz$	-	2050	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	290	-	
Output Capacitance	$C_{oss}$		-	410	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 15.0V, I_D = 16A, R_G = 3.0\Omega$	-	9.0	-	ns
Rise Time	$t_r$		-	5.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	250	-	
Fall Time	$t_f$		-	215	-	
<b>Drain-Source Body Diode Characteristics</b>						
Source-Drain Diode Forward Voltage	$V_{SD}$	$I_S = 16A, V_{GS} = 0V$	-	0.7	1.2	V

Note :

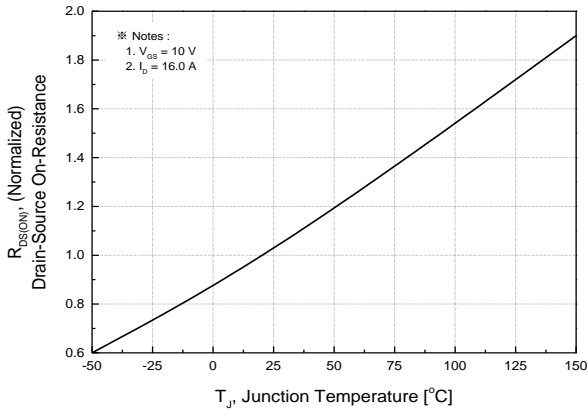
- Surface mounted FR-4 board by JEDEC (jesd51-7)
- $E_{AS}$  is tested at starting  $T_j = 25^\circ C$ ,  $L = 0.1mH$ ,  $I_{AS} = 30.4A$ ,  $V_{DD} = 27V$ ,  $V_{GS} = 10V$ .



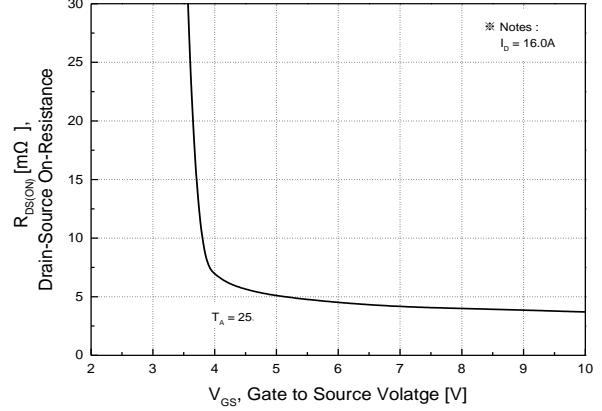
**Fig.1 On-Region Characteristics**



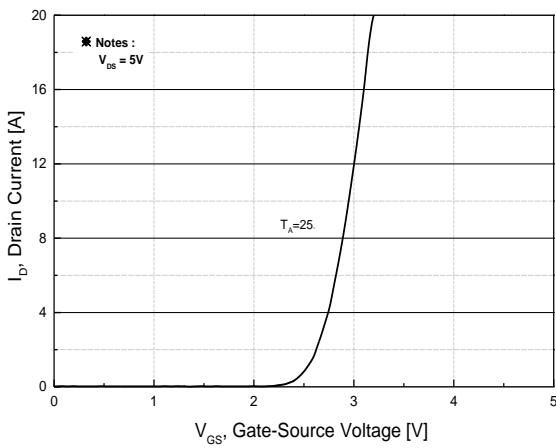
**Fig.2 On-Resistance Variation with Drain Current and Gate Voltage**



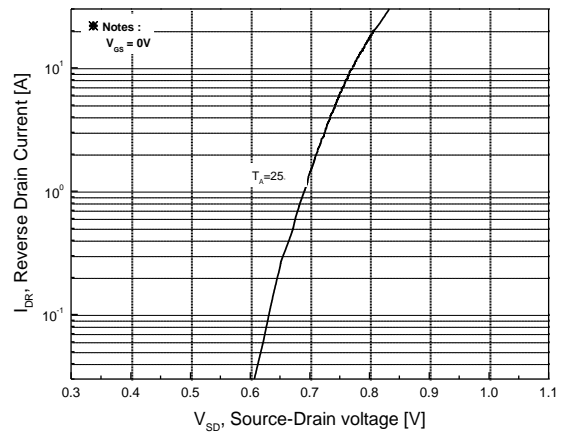
**Fig.3 On-Resistance Variation with Temperature**



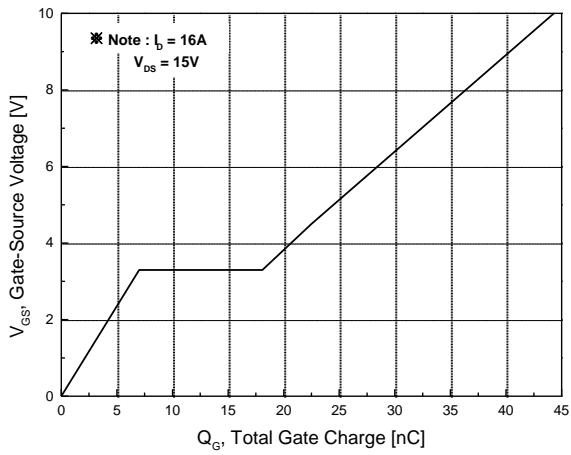
**Fig.4 On-Resistance Variation with Gate to Source Voltage**



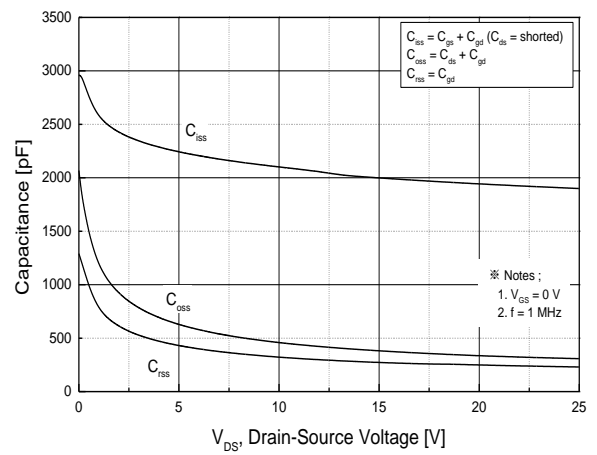
**Fig.5 Transfer Characteristics**



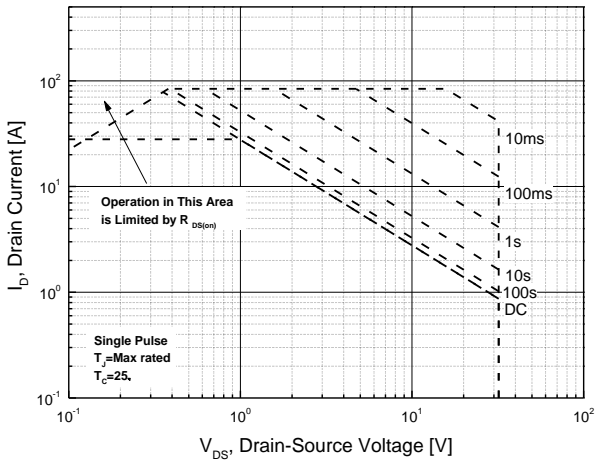
**Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature**



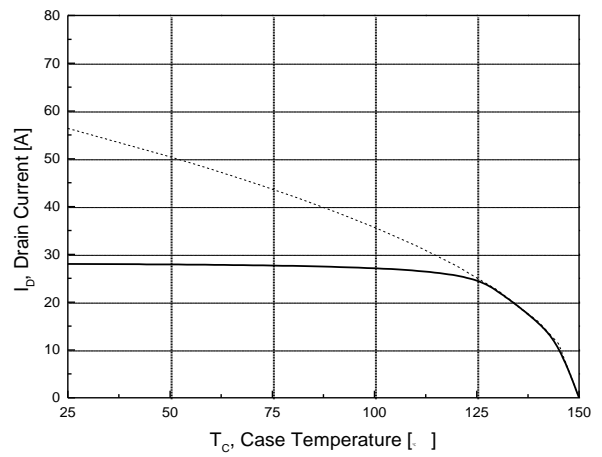
**Fig.7 Gate Charge Characteristics**



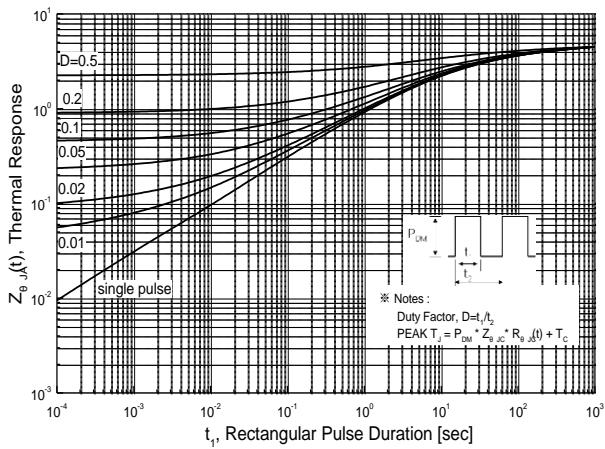
**Fig.8 Capacitance Characteristics**



**Fig.9 Maximum Safe Operating Area**



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

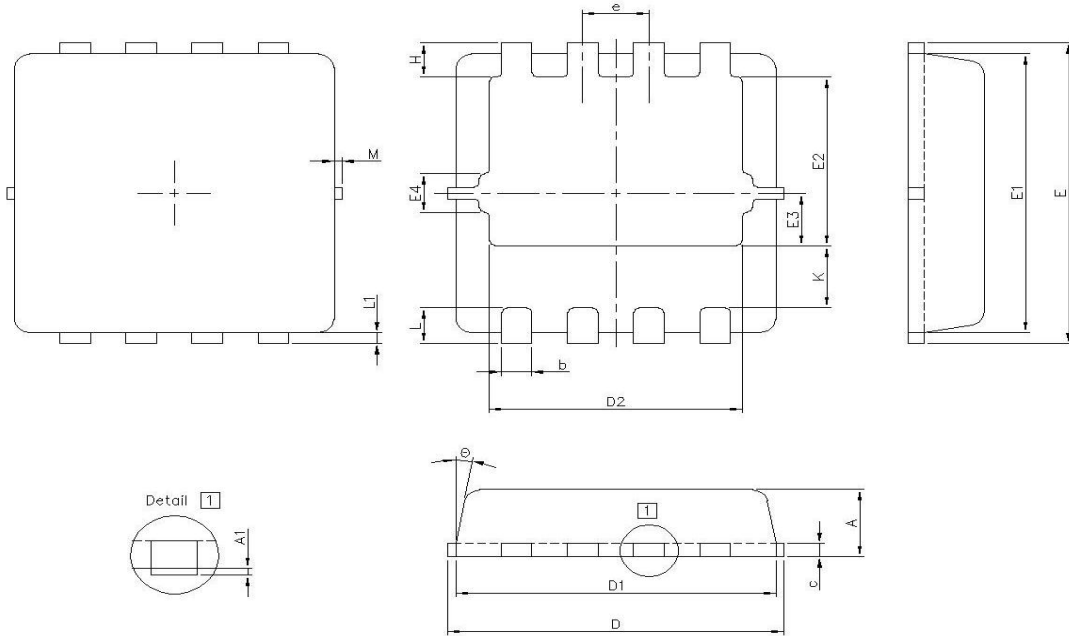


**Fig.11 Transient Thermal Response Curve**

## Package Dimension

### PowerDFN33 (3.3x3.3mm)

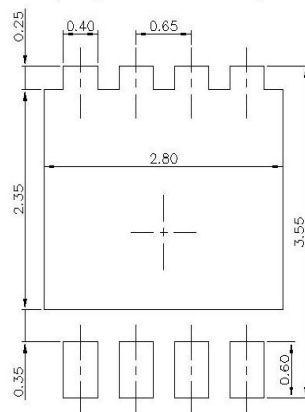
Dimensions are in millimeters, unless otherwise specified



(Unit: mm)


DIM	Min	Max	DIM	Min	Max
A	0.70	0.80	E2	1.78	1.98
A1	0.00	0.05	E3	0.49	0.69
b	0.25	0.35	E4	0.35 TYP.	
c	0.10	0.25	e	0.65 BSC	
D	3.20	3.40	K	0.70 TYP.	
D1	3.00	3.20	L	0.30	0.50
D2	2.39	2.59	L1	0.13 TYP.	
E	3.25	3.45	H	0.27	0.47
E1	3.00	3.20	Θ	0	12

Land Pattern  
(Only for Reference)



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