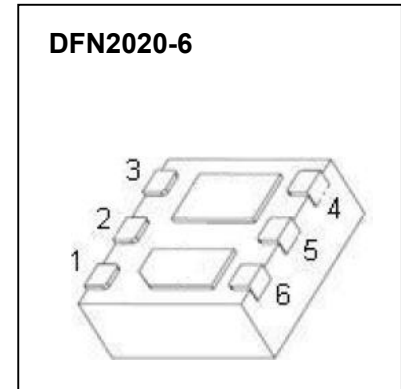


$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
-20V	70m $\Omega$ @-4.5 V	-3 A
	110m $\Omega$ @-2.5 V	



### General Description

The LM2D3PD02 uses advanced trench technology and design to Provide excellent  $R_{DS(on)}$  with low gate charge. This device is suitable for use in DC-DC conversion applications.

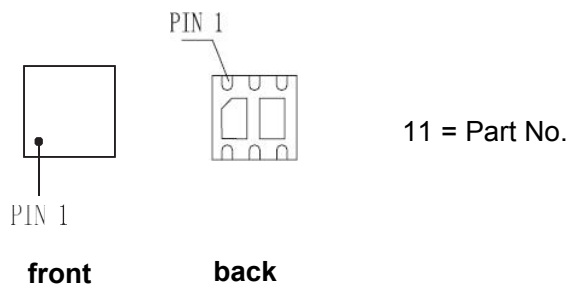
### FEATURE

- Low Profile for Easy Fit in Thin Environments
- Bidirectional Current Flow with Common Source Configuration

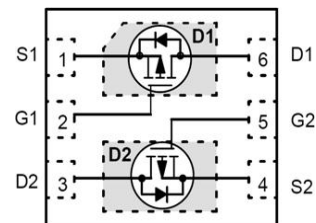
### APPLICATIONS

- Optimized for Battery and Load Management Applications in Portable Equipment
- Li-Ion Battery Charging and Protection Circuits
- High Power Management in Portable , Battery Powered Products
- High Side Load Switch

### MARKING:



### Equivalent Circuit



### Package Marking and Ordering Information

Device	Device Marking	Device Package	Reel Size	Tape width	Quantity
LM2D3PD02	11	DFN2020-6	-	-	4000 units

### Maximum ratings ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	-3	A
Pulsed Drain Current ( $t=300\mu\text{s}$ )	$I_{DM}$	-10	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}\text{C}$

$T_a=25^\circ\text{C}$  unless otherwise specified

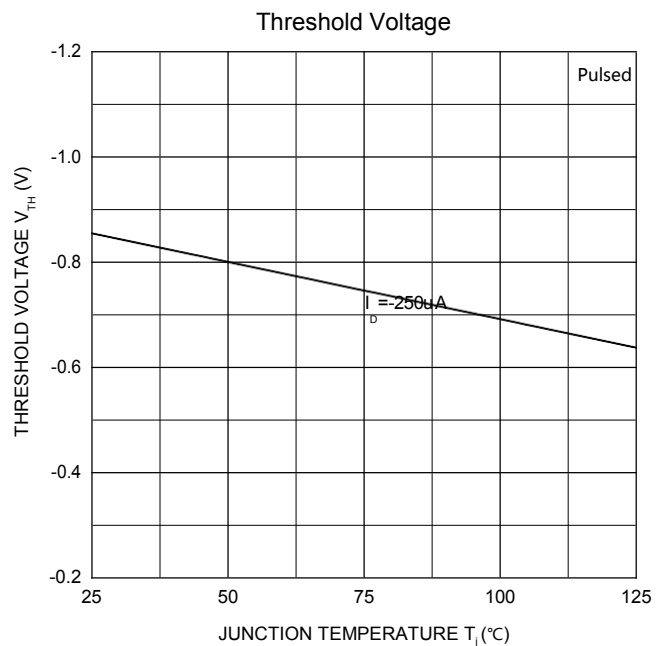
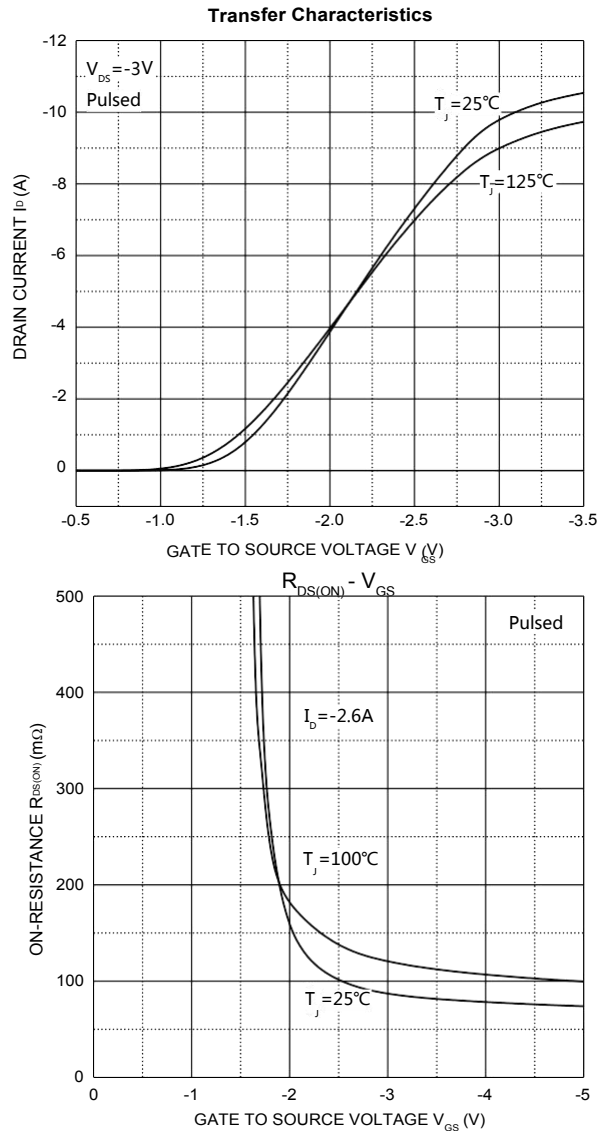
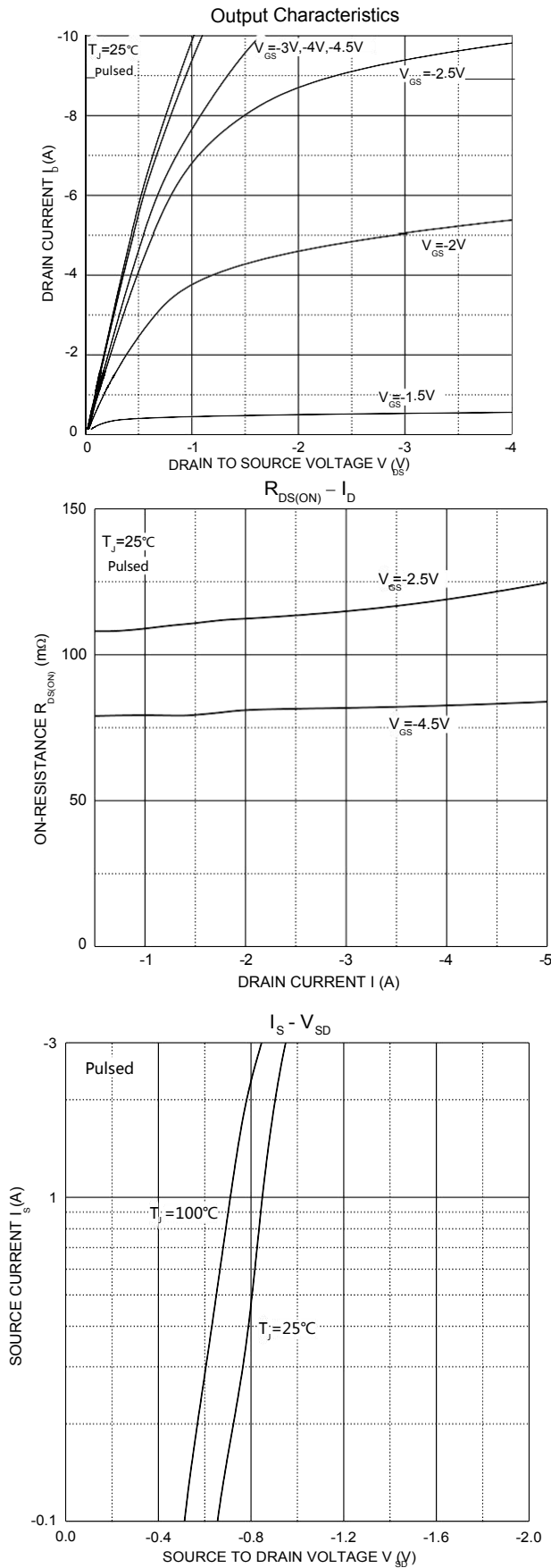
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -16V, V_{GS} = 0V$			-1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 8V, V_{DS} = 0V$			$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1	V
Drain-source on-resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -3A$		70	120	m $\Omega$
		$V_{GS} = -2.5V, I_D = -2A$		120	140	
Forward tranconductance <sup>a</sup>	$g_{FS}$	$V_{DS} = -5V, I_D = -2A$	5			S
<b>Dynamic characteristics<sup>b</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		405		pF
Output Capacitance	$C_{oss}$			75		
Reverse Transfer Capacitance	$C_{rss}$			55		
Gate resistance	$R_g$	$f = 1MHz$		6		$\Omega$
Total Gate Charge	$Q_g$	$V_{DS} = -10V, V_{GS} = -2.5V, I_D = -3A$		3.3	12	nC
Gate-Source Charge	$Q_{gs}$			0.7		
Gate-Drain Charge	$Q_{gd}$			1.3		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10V, V_{GEN} = -4.5V, I_D = -1A$ $R_L = 10\Omega, R_{GEN} = 1\Omega$		11		ns
Turn-on rise time	$t_r$			35		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	$t_f$			10		
<b>Source-Drain Diode characteristics</b>						
Diode forward current	$I_S$	$T_C = 25^\circ\text{C}$			-2.3	A
Diode pulsed forward current <sup>a</sup>	$I_{SM}$				-10	A
Diode Forward voltage	$V_{DS}$	$V_{GS} = 0V, I_S = -1.3A$			-1.2	V

Notes :

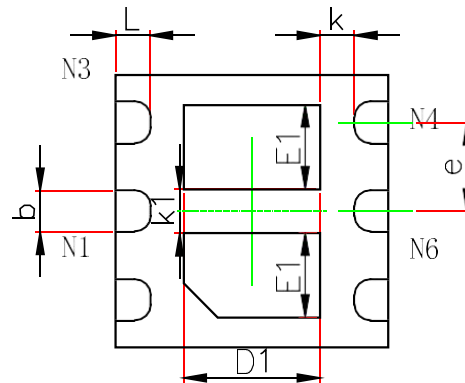
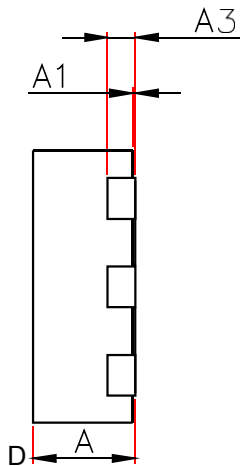
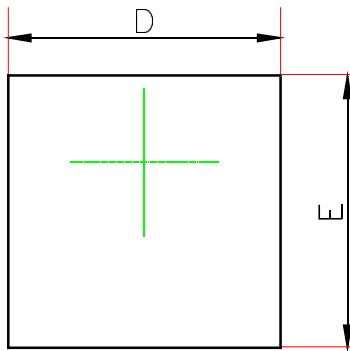
a. Pulse Test : Pulse Width < 300 $\mu s$ , Duty Cycle  $\leq 2\%$ .

b. Guaranteed by design, not subject to production testing.

## Typical Characteristics

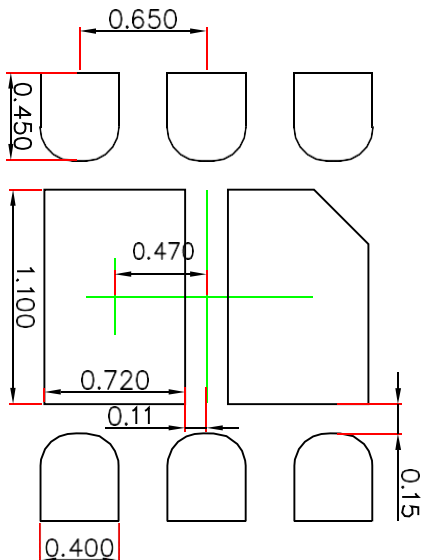


## Package Outline Dimensions DFN2020-6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.900	1.100	0.035	0.043
E1	0.520	0.720	0.020	0.028
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
k	0.200MIN.		0.008MIN.	
k1	0.320REF.		0.013REF.	
L	0.200	0.300	0.008	0.012

## Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.050$ mm.
3. The pad layout is for reference purposes only.