

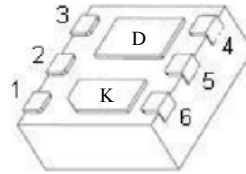
# KY3117DC

## P-channel MOSFET and Schottky Barrier Diode

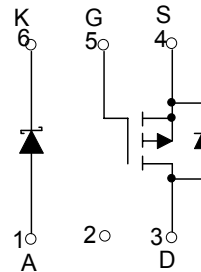
### FEATURE

- Independent Pinout to Each Device to Ease Circuit Design
- High Current Schottky Diode
- $R_{DS(ON)} \leq 100m\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} \leq 135m\Omega @ V_{GS} = -2.5V$
- $R_{DS(ON)} \leq 250m\Omega @ V_{GS} = -1.8V$

### DFNWB2×2-6L-A



### Equivalent Circuit



### APPLICATION

- Optimized for Portable Applications Like Cell Phones, Digital Cameras, Media Players, etc
- DC-DC Buck Circuits
- Li-ion Battery Applications
- Color Display and Camera Flash Regulators

### MARKING .JA

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

Symbol	Parameter	Value	Unit
<b>P-MOSFET</b>			
$V_{DS}$	Drain-Source Voltage	-20	V
$V_{GS}$	Gate-Source Voltage	$\pm 8$	V
$I_D$	Continuous Drain Current	- <del>10</del>	A
$I_{DM}^*$	Pulse Drain Current	-10	A
<b>Schottky Barrier Diode</b>			
$V_{RRM}$	Peak Repetitive Reverse Voltage	- <del>20</del>	V
$V_R$	DC Blocking Voltage	- <del>20</del>	V
$I_O$	Average Rectified Forward Current	- <del>10</del>	A
<b>Power Dissipation, Temperature and Thermal Resistance</b>			
$P_D$	Power Dissipation	0.75	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	83.3	$^\circ\text{C/W}$
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55~+150	$^\circ\text{C}$
$T_L$	Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	260	$^\circ\text{C}$

\*Repetitive rating: Pluse width limited by junction temperature.

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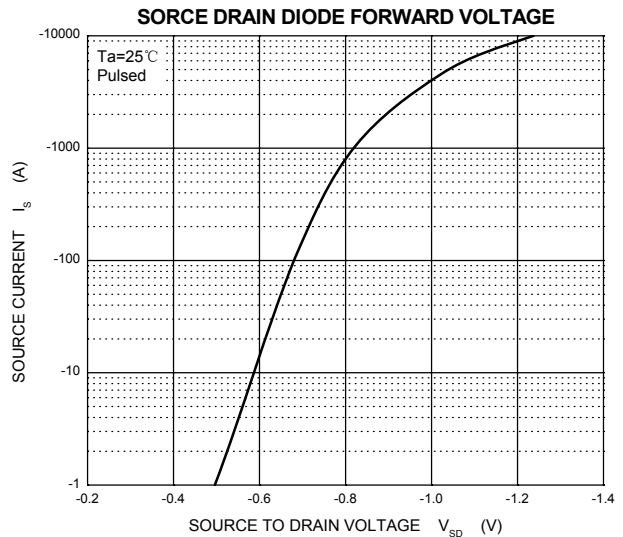
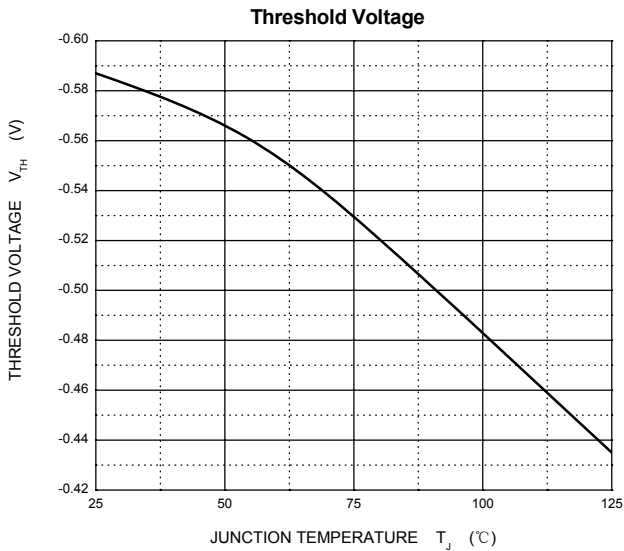
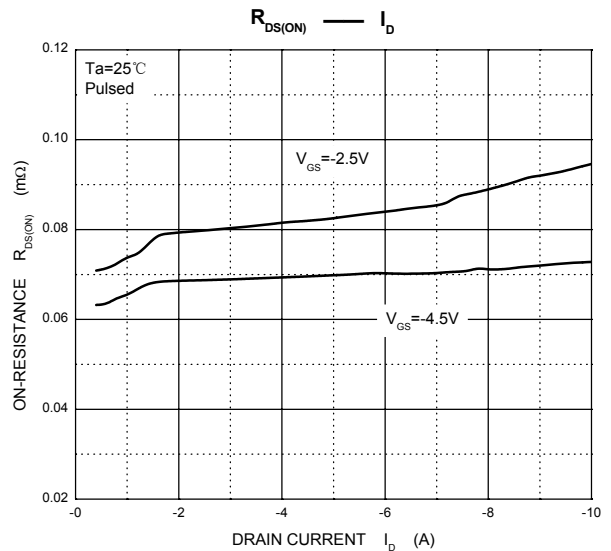
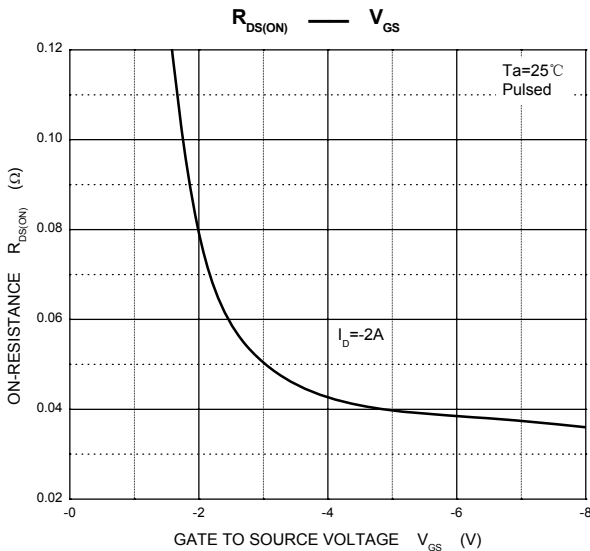
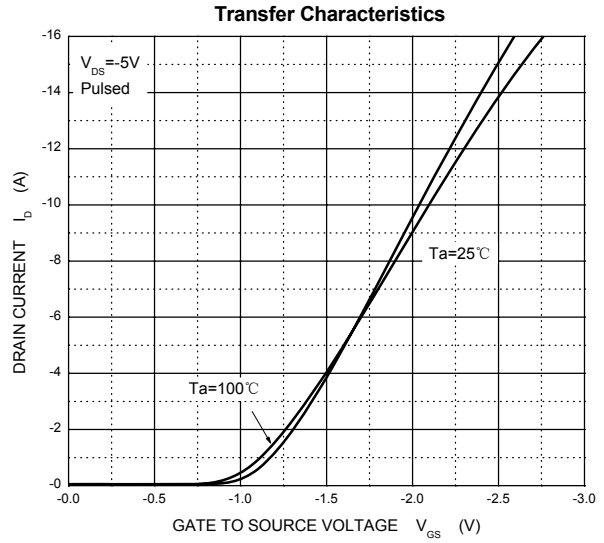
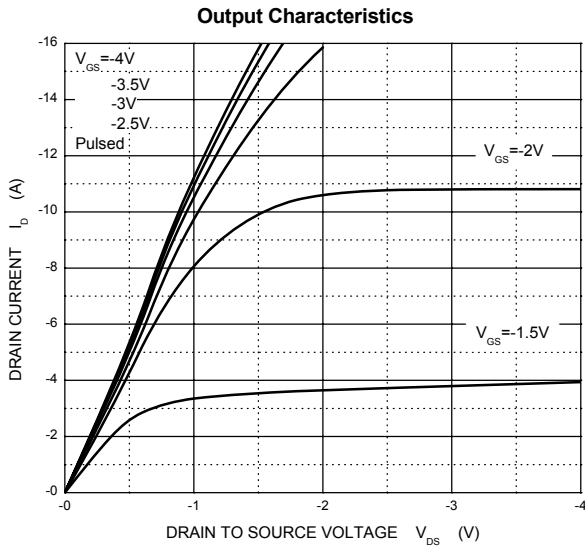
## MOSFET ELECTRICAL CHARACTERISTICS Ta =25 °C unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>P-MOSFET</b>						
<b>Off Characteristic</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
<b>On Characteristic</b>						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4		-1	V
Drain-source on-resistance <sup>note1</sup>	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -2A$			100	m $\Omega$
		$V_{GS} = -2.5V, I_D = -2A$			135	m $\Omega$
		$V_{GS} = -1.8V, I_D = -1.6A$			250	m $\Omega$
Forward transconductance <sup>note1</sup>	$g_{FS}$	$V_{DS} = -5V, I_D = -2A$	2.5			S
<b>Dynamic Characteristics</b> <sup>note2</sup>						
Input capacitance	$C_{iss}$	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		531		pF
Output capacitance	$C_{oss}$			91		pF
Reverse transfer capacitance	$C_{rss}$			56		pF
Total Gate Charge	$Q_g$	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -2A$		5.5	6.2	nC
Gate-Source Charge	$Q_{gs}$			1.0		nC
Gate-Drain Charge	$Q_{gd}$			1.4		nC
Gate Resistance	$R_g$			8.8		$\Omega$
<b>SWITCHING PARAMETERS</b> <sup>note 2</sup>						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = -4.5V, V_{DD} = -5V, R_G = 6\Omega, I_D = -1A$		5.2		ns
Turn-on rise time	$t_r$			13.2		ns
Turn-off delay time	$t_{d(off)}$			13.7		ns
Turn-off fall time	$t_f$			19.1		ns
<b>SCHOTTKY BARRIER DIODE</b>						
Forward voltage	$V_F$	$I_F = 0.1A$			0.39	V
		$I_F = 1A$			0.55	V
Reverse current	$I_R$	$V_R = 30V$			20	$\mu A$
		$V_R = 20V$			8	$\mu A$
		$V_R = 10V$			4.5	$\mu A$
Junction capacitance	$C_j$	$V_R = 5V, f = 1MHz$		30		pF
Diode forward voltage(note1)	$V_{SD}$	$I_S = -1A, V_{GS} = 0V$			-1	V

**Note:**

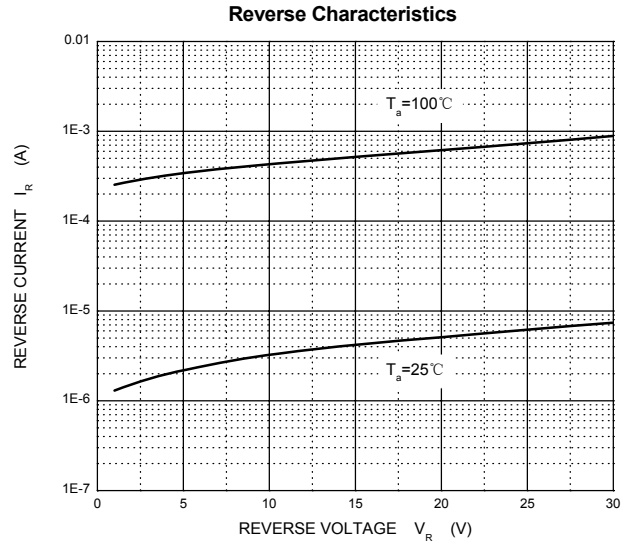
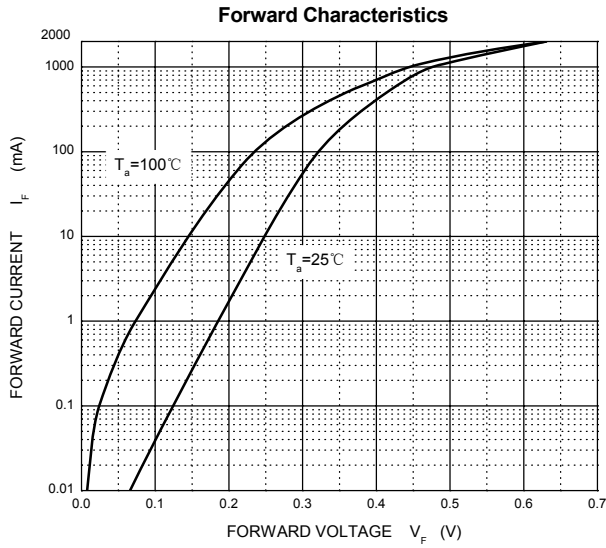
- 1.Pulse test: pulse width =300 $\mu s$ , duty cycle $\leq$  2%
- 2.These parameters have no way to verify.

## P-channel Typical Characteristics



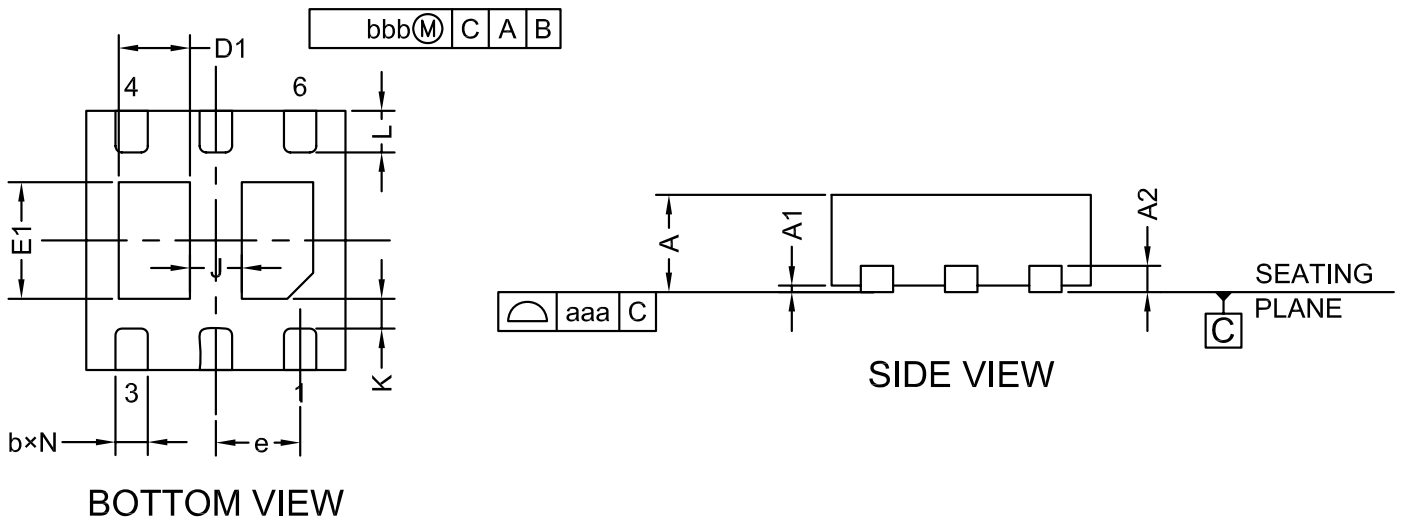
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## Schottky Typical Characteristics



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## DFNWB2X2-6L-A Package Outline Dimensions



SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.203		
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	0.50	0.55	0.60
E	1.95	2.00	2.05
E1	0.85	0.90	0.95
e	0.65BSC		
L	0.27	0.32	0.37
J	0.40BSC		
K	0.20MIN		
N	6		
aaa	0.08		
bbb	0.10		