

CJDE8404 N-Channel + P-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	50mΩ@-10V	-4A
	80mΩ@-4.5V	
30V	50mΩ@10V	5A
	80mΩ@4.5V	



Feature

- Low drain-source ON-resistance
- High forward transfer admittance
- Low leakage current
- Enhancement mode

Application

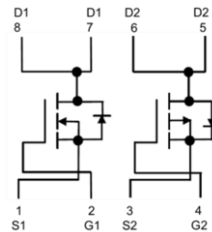
- Portable equipment
- Motor drive

MARKING:



DE8404 = Device Code
XX = Date Code

Equivalent Circuit



ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
P-MOSFET			
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ⁽¹⁾	I_D	-4	A
Pulsed Drain Current	I_{DM}	-16	A
Power Dissipation	P_D	3	W
N-MOSFET			
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	5	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	20	A
Power Dissipation	P_D	3	W
Temperature and Thermal Resistance			
Thermal Resistance from Junction to Ambient ⁽²⁾	$R_{\theta JA}$	42	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

MOSFET ELECTRICAL CHARACTERISTICS

P-channel MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.7	-3.0	V
Drain-source on-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -2.0A$		35	50	m Ω
		$V_{GS} = -4.5V, I_D = -2.0A$		53	80	
Forward transconductance	g_{FS}	$V_{DS} = -5V, I_D = -1.0A$	5			S
Diode forward voltage ⁽³⁾	V_{DS}	$I_S = -1.0A, V_{GS} = 0V$		-0.8	-1.2	V
Dynamic characteristics⁽⁴⁾						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, F = 1.0MHz$		850		pF
Output Capacitance	C_{oss}			101		
Reverse Transfer Capacitance	C_{rss}			65		
Total gate charge	Q_g	$V_{DS} = -15V, I_D = -4A, V_{GS} = -4.5V$		9.5		nC
Gate-source charge	Q_{gs}			2		
Gate-drain charge	Q_{gd}			3		
Switching Characteristics⁽⁴⁾						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V, I_D = -4A$ $V_{GS} = -10V, R_{GEN} = 6\Omega$		7		nS
Turn-on rise time	t_r			3		
Turn-off delay time	$t_{d(off)}$			20		
Turn-off fall time	t_f			12		

N-channel MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^\circ\text{C}$ unless otherwise noted)

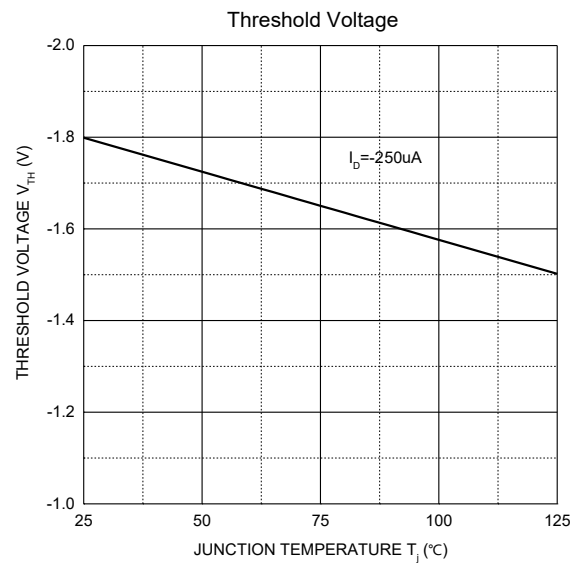
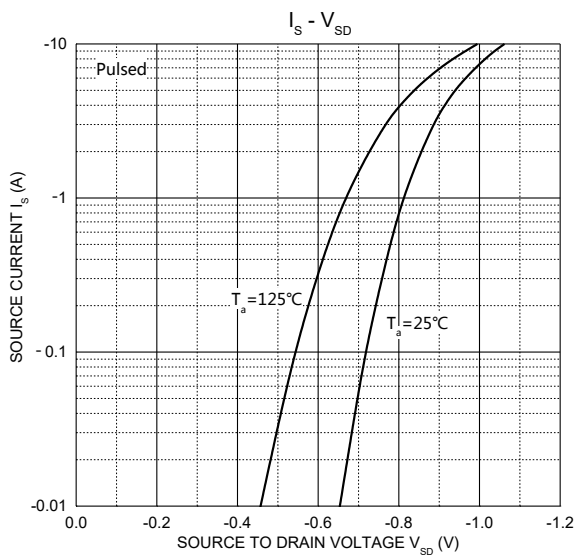
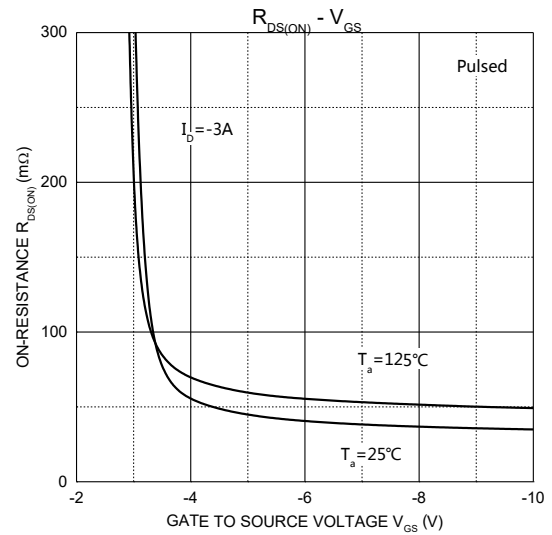
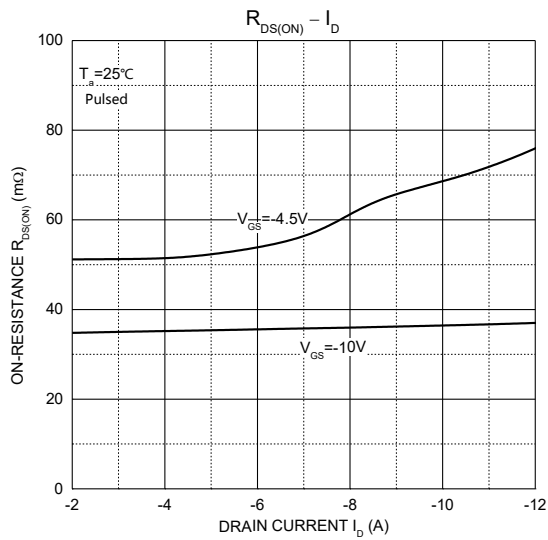
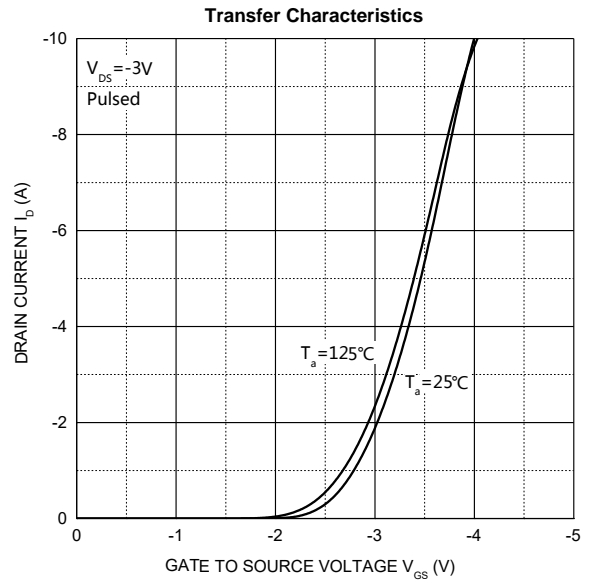
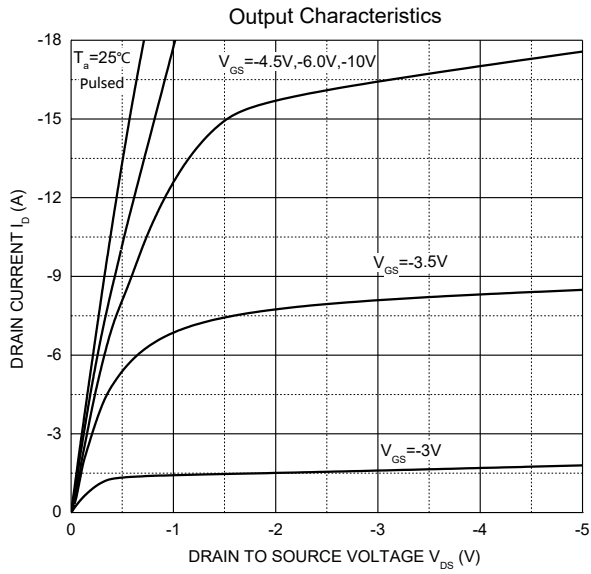
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.3	3.0	V
Drain-source on-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.0A$		25	50	m Ω
		$V_{GS} = 4.5V, I_D = 2.0A$		35	80	
Forward transconductance	g_{FS}	$V_{DS} = 5V, I_D = 1.0A$	5			S
Diode Forward voltage ⁽³⁾	V_{DS}	$I_S = 1.0A, V_{GS} = 0V$		0.8	1.2	V
Dynamic characteristics⁽⁴⁾						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, F = 1.0MHz$		633		pF
Output Capacitance	C_{oss}			65		
Reverse Transfer Capacitance	C_{rss}			55		
Total gate charge	Q_g	$V_{DS} = 15V, I_D = 5.8A, V_{GS} = 4.5V$		9.5		nC
Gate-source charge	Q_{gs}			1.5		
Gate-drain charge	Q_{gd}			3		
Switching Characteristics⁽⁴⁾						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 15V, R_L = 2.7\Omega$ $V_{GS} = 10V, R_{GEN} = 3\Omega$		3.3		ns
Turn-on rise time	t_r			4.8		
Turn-off delay time	$t_{d(off)}$			26		
Turn-off fall time	t_f			4		

Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t < 5$ sec.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

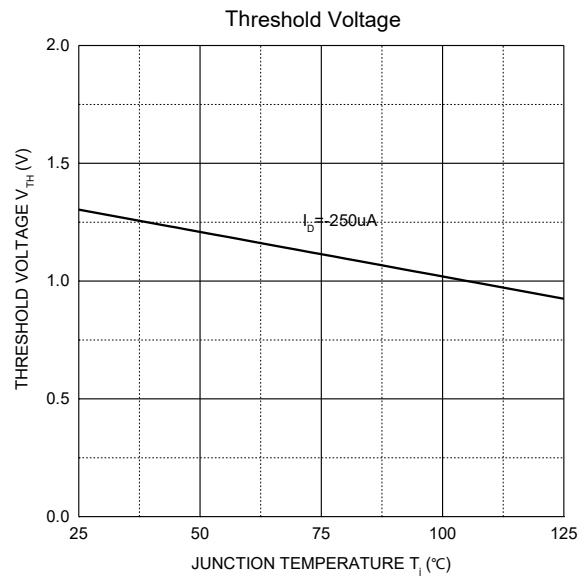
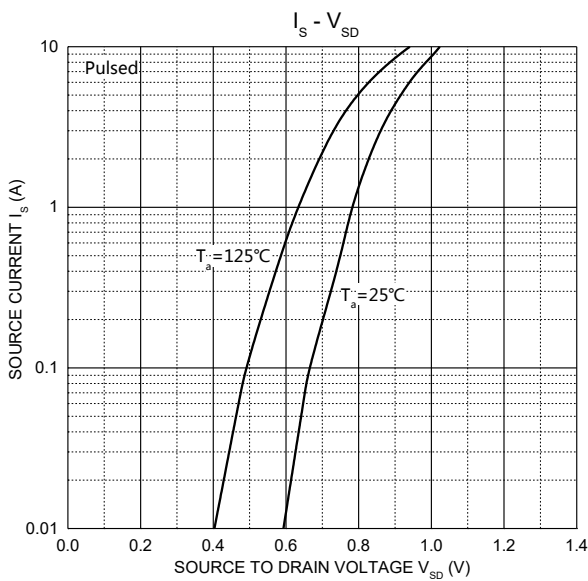
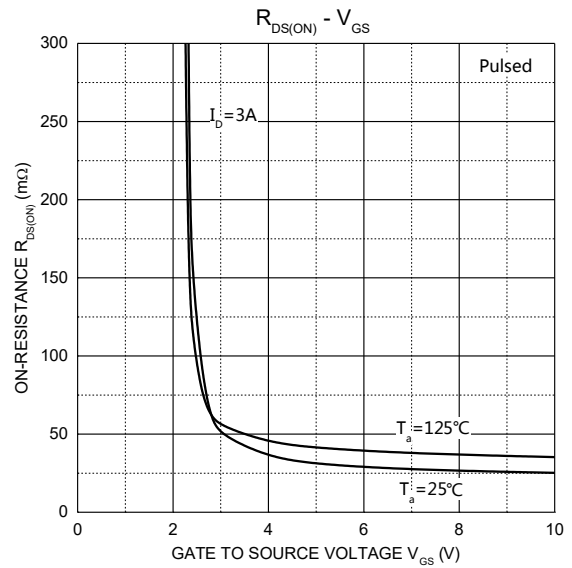
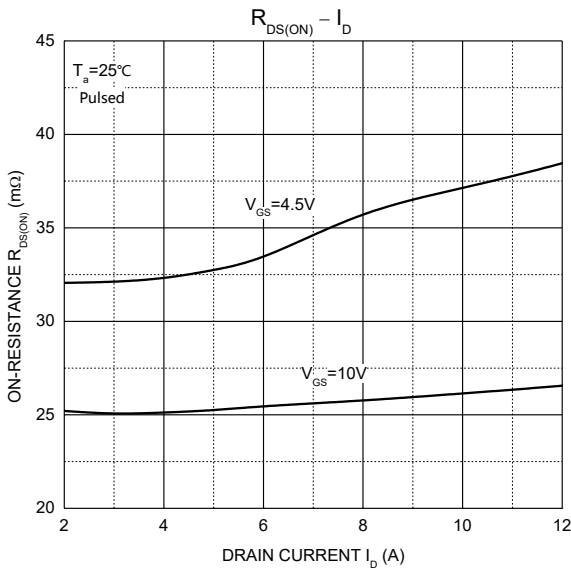
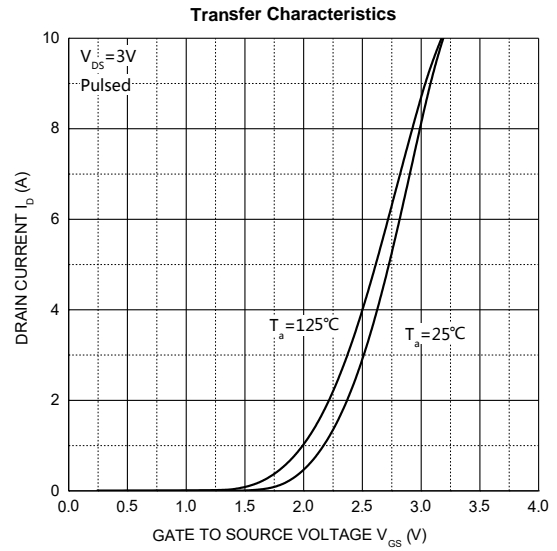
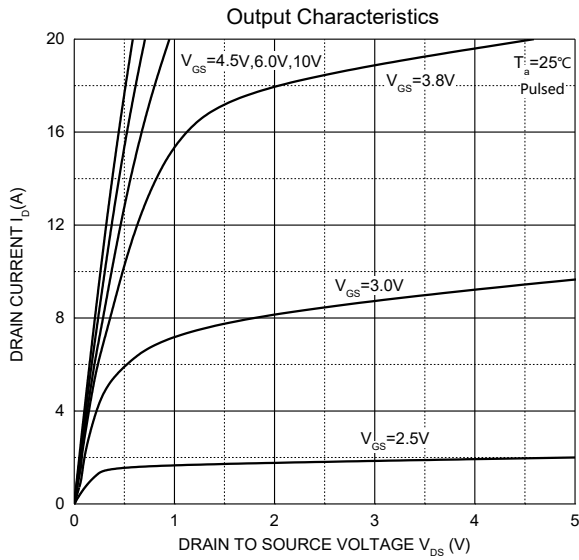
Typical Characteristics

P-Channel MOS

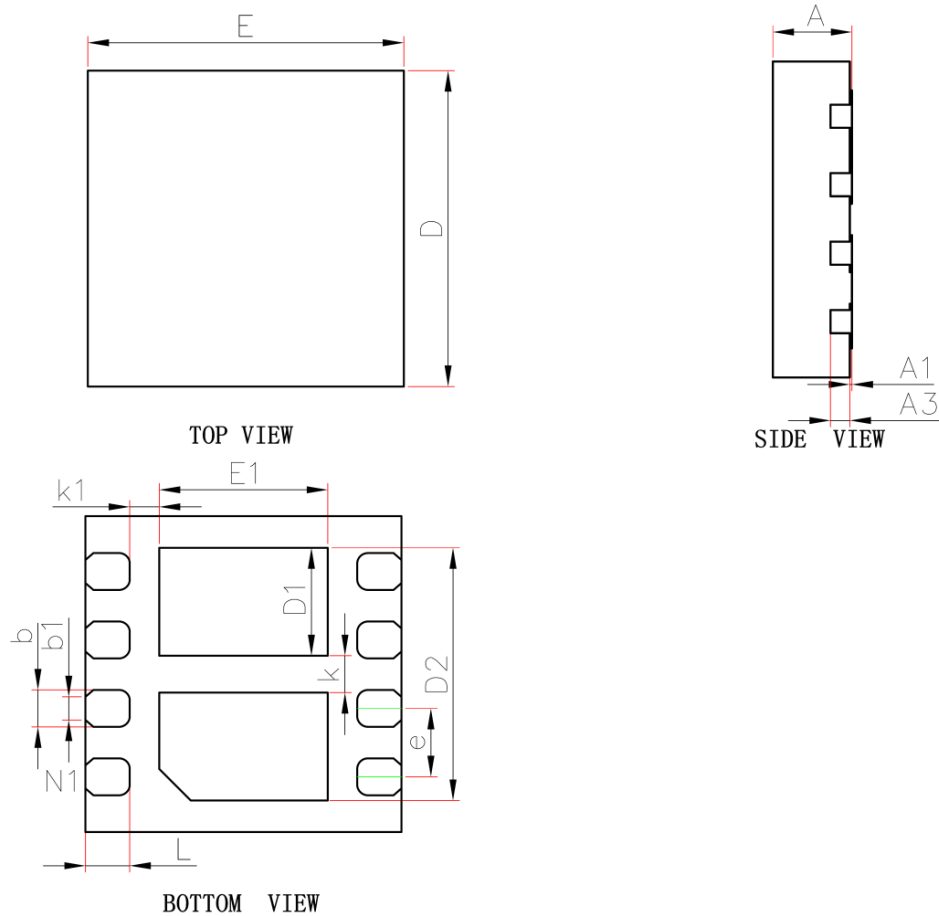


Typical Characteristics

N-Channel MOS



DFNWB3X3-8L-U Package Information



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	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
D1	0.925	1.125	0.036	0.044
E1	1.500	1.700	0.059	0.067
D2	2.300	2.500	0.091	0.098
b	0.300	0.400	0.012	0.016
b1	0.220REF		0.009REF	
e	0.650BSC.		0.026BSC.	
k	0.350REF		0.014REF	
k1	0.280REF		0.011REF	
L	0.370	0.470	0.015	0.019

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