Elektronische Bauelemente

SSDE8404-C

N-Ch: 5A, 30V, $R_{DS(ON)}$ 35mΩ
P-Ch: -4A, -30V, $R_{DS(ON)}$ 50mΩ
N & P-Ch Enhancement Mode Power MOSFET

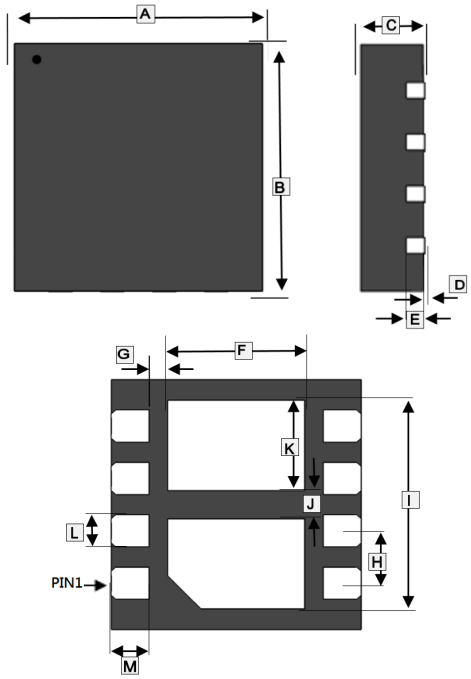
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSDE8404-C is the highest performance trench N-Ch and P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSDE8404-C meet the RoHS and Green Product requirement with full function reliability approved.

DFNW3x3-8D

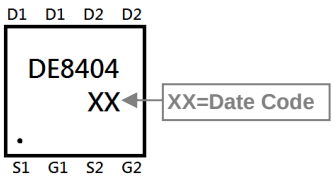


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.9	3.1	H	0.65REF	
B	2.9	3.1	I	2.3	2.5
C	0.7	0.8	J	0.35REF	
D	0	0.1	K	0.925	1.125
E	0.2REF.		L	0.3	0.4
F	1.5	1.7	M	0.37	0.47
G	0.28REF				

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING

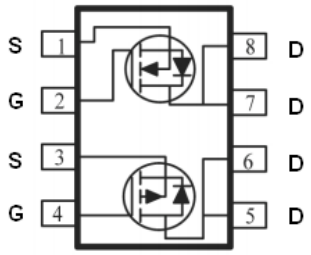


PACKAGE INFORMATION

Package	MPQ	Leader Size
DFNW3x3-8D	5K	13 inch

ORDER INFORMATION

Part Number	Type
SSDE8404-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Ratings		Unit
		N-Ch	P-Ch	
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	±20		V
Continuous Drain Current [1]	I_D	5	-4	A
Pulsed Drain Current	I_{DM}	20	-16	A
Total Power Dissipation	P_D	3		W
Thermal Resistance Junction-Ambient [2]	$R_{\theta JA}$	42		℃/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150		℃

N-CHANNEL ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage	$V_{GS(th)}$	1	-	3	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer Conductance	g_{fs}	-	5	-	S	V_{DS}=5V, I_D=1A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0
Static Drain-Source On-Resistance [3]	$R_{DS(ON)}$	-	-	35	mΩ	V_{GS}=10V, I_D=2A
		-	-	50		V_{GS}=4.5V, I_D=2A
Total Gate Charge	Q_g	-	9.5	-	nC	I_D=5.8A V_{DS}=15V V_{GS}=4.5V
Gate-Source Charge	Q_{gs}	-	1.5	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	3	-		
Turn-on Delay Time	$T_{d(on)}$	-	3.3	-	nS	V_{DD}=15V V_{GS}=10V R_G=3Ω R_L=2.7Ω
Rise Time	T_r	-	4.8	-		
Turn-off Delay Time	$T_{d(off)}$	-	26	-		
Fall Time	T_f	-	4	-		
Input Capacitance	C_{iss}	-	633	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance	C_{oss}	-	65	-		
Reverse Transfer Capacitance	C_{rss}	-	55	-		
Source-Drain Diode						
Forward on Voltage [3]	V_{SD}	-	-	1.2	V	V_{GS}=0, I_S=1A

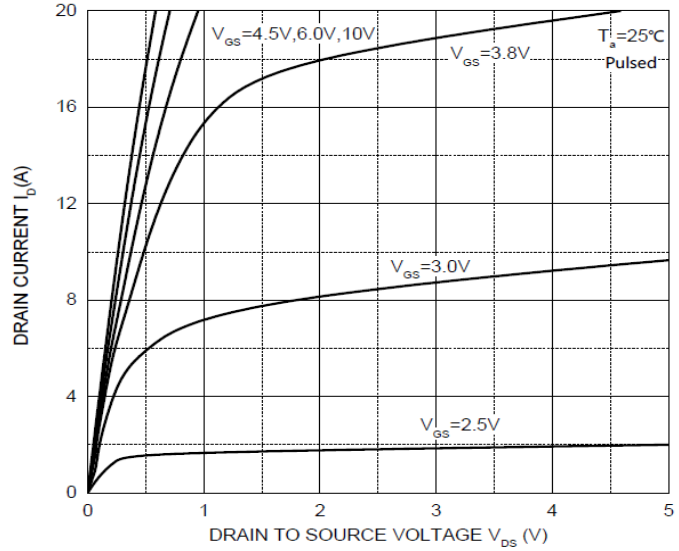
P-CHANNEL ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	V_{GS}=0, I_D= -250μA
Gate Threshold Voltage	$V_{GS(th)}$	-1	-	-3	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Transfer Conductance	g_{fs}	-	5	-	S	V_{DS}= -5V, I_D= -1A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	-1	μA	V_{DS}= -24V, V_{GS}=0
Static Drain-Source On-Resistance [3]	$R_{DS(ON)}$	-	-	50	mΩ	V_{GS}= -10V, I_D= -2A
		-	-	80		V_{GS}= -4.5V, I_D= -2A
Total Gate Charge	Q_g	-	9.5	-	nC	I_D= -4A V_{DS}= -15V V_{GS}= -4.5V
Gate-Source Charge	Q_{gs}	-	2	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	3	-		
Turn-on Delay Time	$T_{d(on)}$	-	7	-	nS	V_{DD}= -15V V_{GS}= -10V R_G=6Ω I_D= -4A
Rise Time	T_r	-	3	-		
Turn-off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	T_f	-	12	-		
Input Capacitance	C_{iss}	-	850	-	pF	V_{GS}=0 V_{DS}= -15V f=1MHz
Output Capacitance	C_{oss}	-	101	-		
Reverse Transfer Capacitance	C_{rss}	-	65	-		
Source-Drain Diode						
Forward on Voltage [3]	V_{SD}	-	-	-1.2	V	V_{GS}=0, I_S= -1A

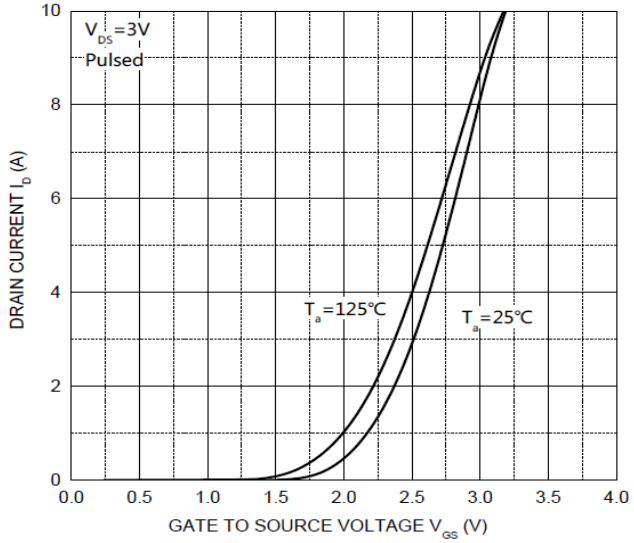
Notes:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse width≦300μs, duty cycle≦2%.

N-CHANNEL CHARACTERISTIC CURVE

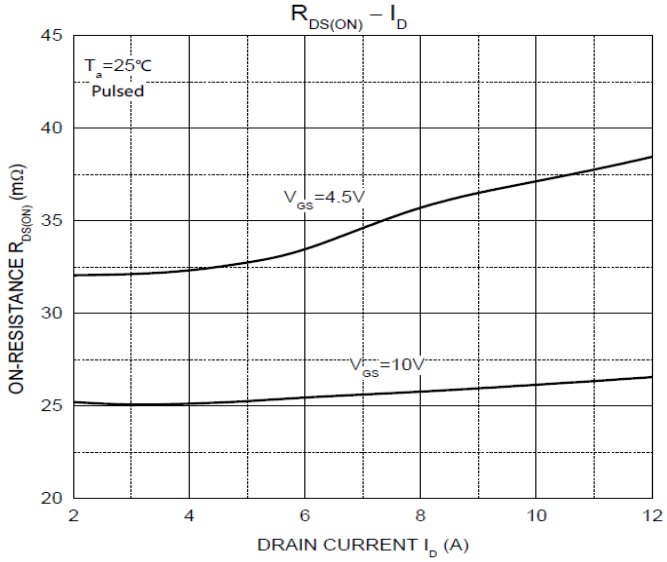
Output Characteristics



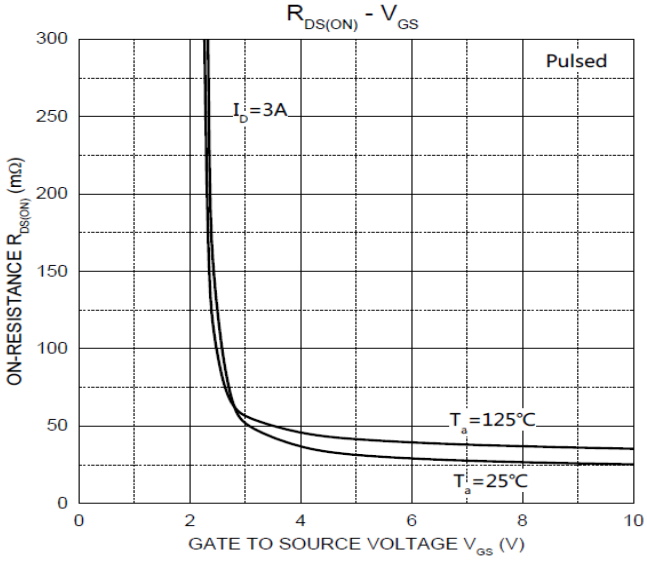
Transfer Characteristics



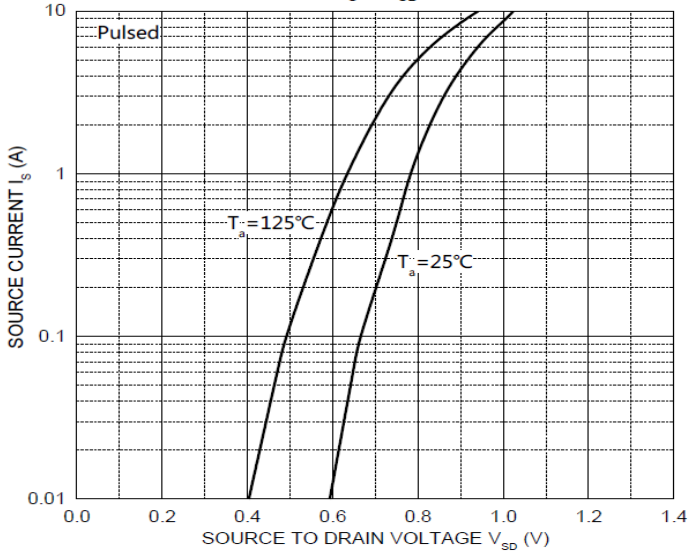
$R_{DS(ON)}$ – I_D



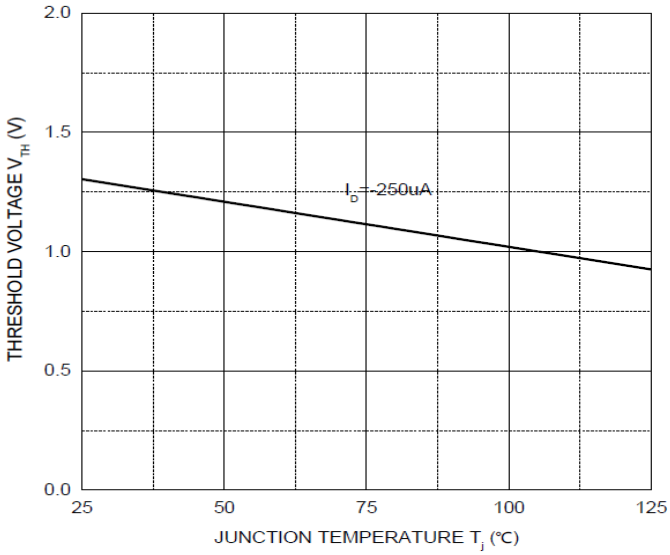
$R_{DS(ON)}$ - V_{GS}



I_S - V_{SD}



Threshold Voltage



P-CHANNEL CHARACTERISTIC CURVE