SDM5E6N030LSX8H

N-Channel Enhancement Mode Field Effect Transistor

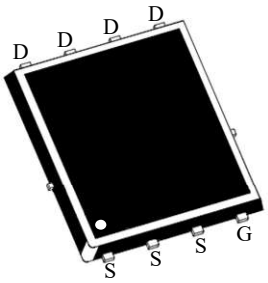
FEATURES

· Low $R_{DS(on)}$

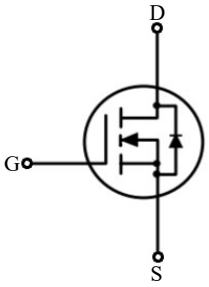
· Suffix "H" indicates Halogen-free parts, ex.SDM5E6N030LSX8H

PIN CONFIGURATION

DFN5x6-8L



Top View



D	Drain
G	Gate
S	Source

Maximum Ratings(T_A=25 ℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current T_C=25℃	I_D	115.0	A
Continuous Drain Current T_C=100℃		72.5	
Pulsed Drain Current (Note 1)	I_{DM}	480	A
Avalanche Current	I_{AS}	60.9	A
Avalanche Energy (Note 2)	E_{AS}	185.4	mJ
Power Dissipation T_C=25℃	P_D	63.8	W
Thermal Resistance from Junction to Ambient (Note 3)	$R_{\theta JA}$	39	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.9	℃/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	℃

Note:

1. The data tested by pulsed, pulse width ≦100μs, duty cycle ≦2%, Reptitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

2. Limited by $T_{J(MAX)}$, starting T_J=25°C, L=0.1mH, R_g=25Ω, I_{AS}=60.9A, V_{GS}=10V.

3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1 $inch^2$ copper plate in still air.

Electrical Characteristics(T_A=25 ℃ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	I_D=250μA	$V_{(BR)DSS}$	65	-	-	V
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	1.2	-	2.5	V
Zero Gate Voltage Drain Current	V_{DS}=65V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS}=±20V	I_{GSS}	-	-	±100	nA
Drain-Source On-Resistance	V_{GS}=10V, I_D=30A V_{GS}=4.5V, I_D=20A	$R_{DS(on)}$	- -	2.4 -	3.0 4.5	mΩ
Forward Transconductance	V_{DS}=5V, I_D=20A	g_{FS}	-	62.1	-	S
Dynamic						
Gate Resistance	V_{DS}=0V, V_{GS}=V, f=1MHz	R_g	-	1.2	-	Ω
Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V, I_D=30A	Q_g	-	40.0	-	nC
	V_{DS}=30V, V_{GS}=10V, I_D=30A		-	78.5	-	
Gate-Source Charge		Q_{gs}	-	13.0	-	
Gate-Drain Charge		Q_{gd}	-	18.0	-	
Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz	C_{iss}	-	4128	-	pF
Output Capacitance		C_{oss}	-	1245	-	
Reverse Transfer Capacitance		C_{rss}	-	34	-	
Turn on Delay Time	V_{DS}=30V, I_D=30A V_{GS}=10V, R_g=3.3Ω	$t_{d(on)}$	-	26	-	ns
Turn on Rise Time		t_r	-	44	-	
Turn off Delay Time		$t_{d(off)}$	-	25	-	
Turn off Fall Time		t_f	-	6	-	
Drain-Source Body Diode						
Diode Forward Voltage	V_{GS}=0V, I_S=1A	V_{SD}	-	-	1.3	V
Diode Continuous Forward Current	-	I_S	-	-	115	A
Diode Pulse Current		I_{SM}	-	-	480	A
Reverse Recovery Time	I_S=30A, di/dt=100A/μs	t_{rr}	-	40	-	ns
Reverse Recovery Charge		Q_{rr}	-	33	-	nC

RATINGS AND CHARACTERISTIC CURVES

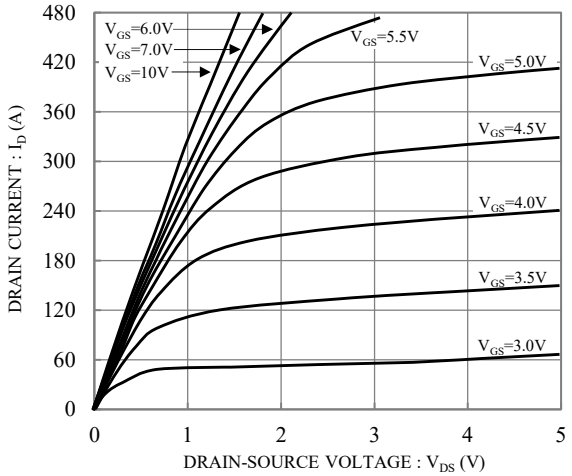


Fig.1 Typical Output Characteristics

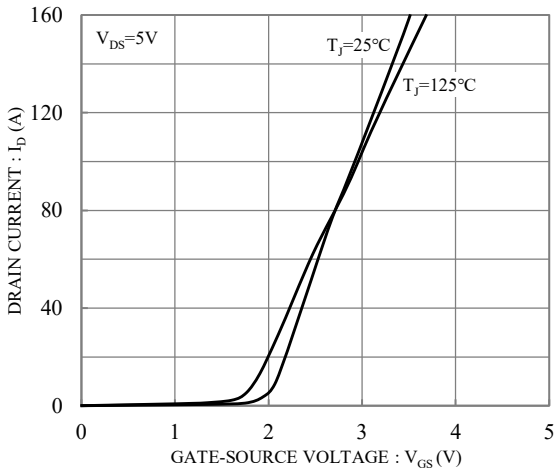


Fig.2 Typical Transfer Characteristics

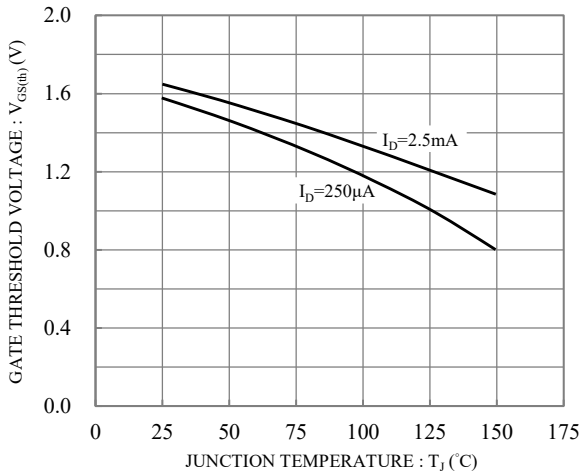


Fig.3 Gate Threshold Voltage vs. Junction Temperature

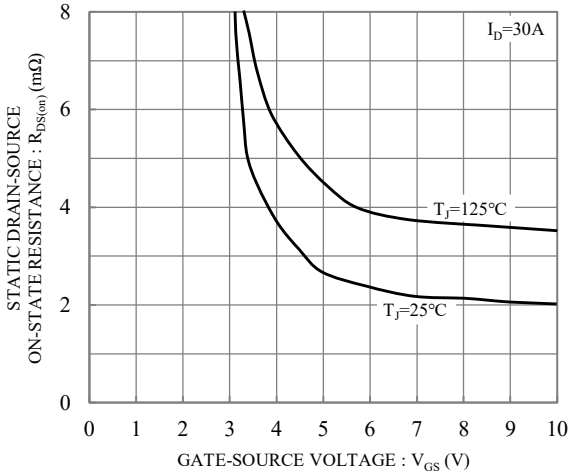


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

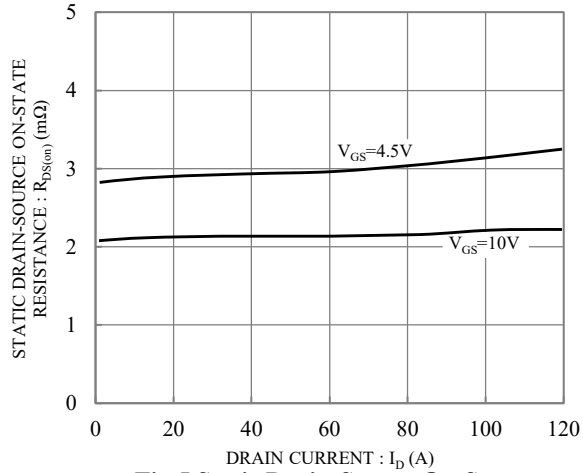


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

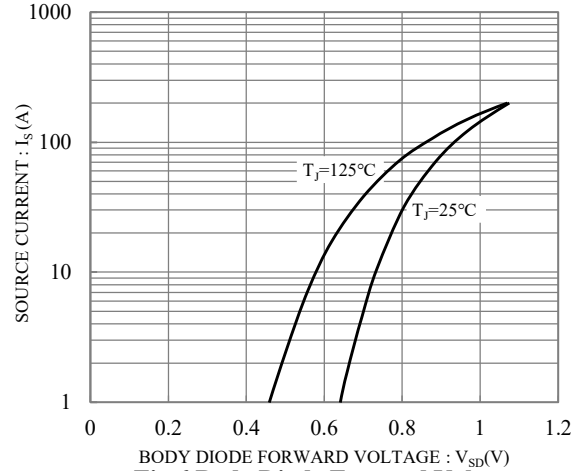


Fig.6 Body Diode Forward Voltage vs. Source Current

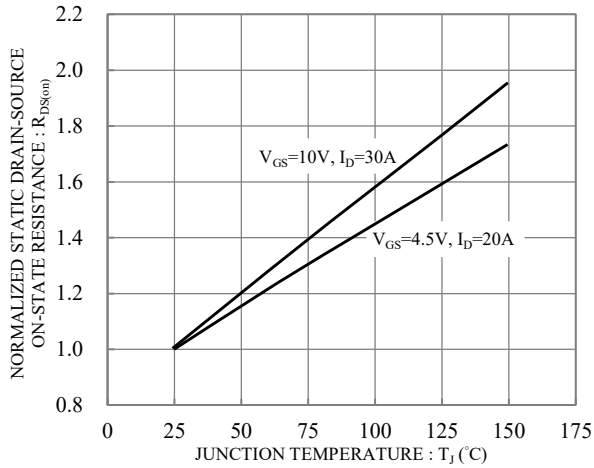


Fig.7 Drain-Source On-State Resistance vs. Junction Tempearture

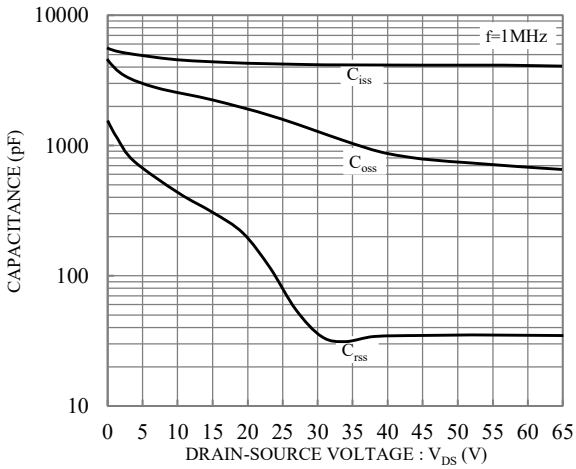


Fig.8 Capacitance vs. Drain-Source Voltage

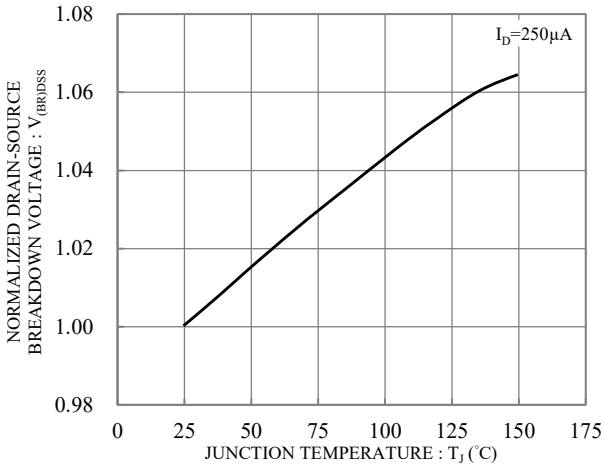


Fig.9 Breakdown Voltage vs. Junction Temperature

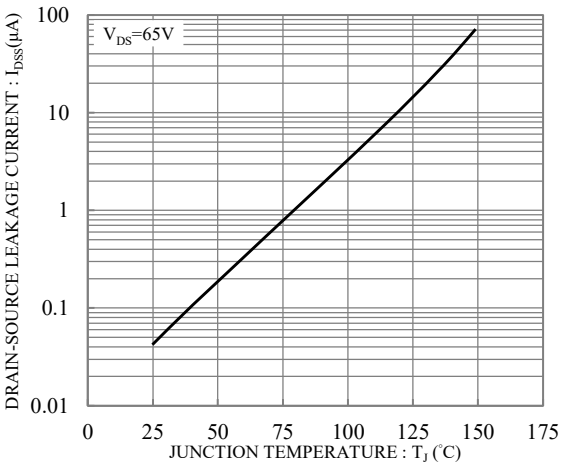


Fig.10 Drain-Source Leakge Current vs. Junction Temperature

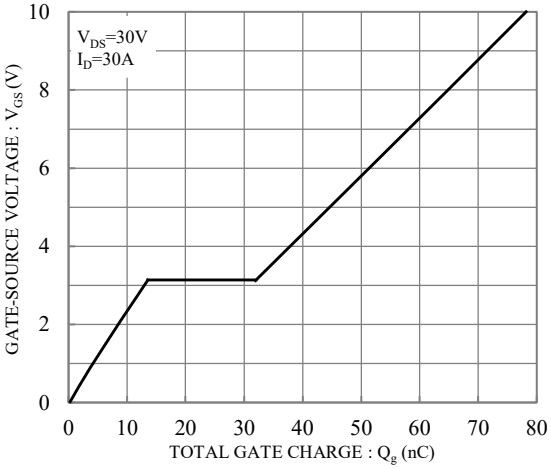


Fig.11 Gate Charge Characteristics

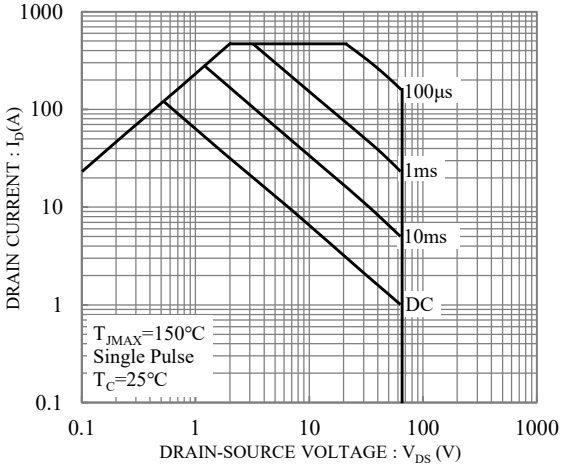


Fig.12 Safe Operation Area

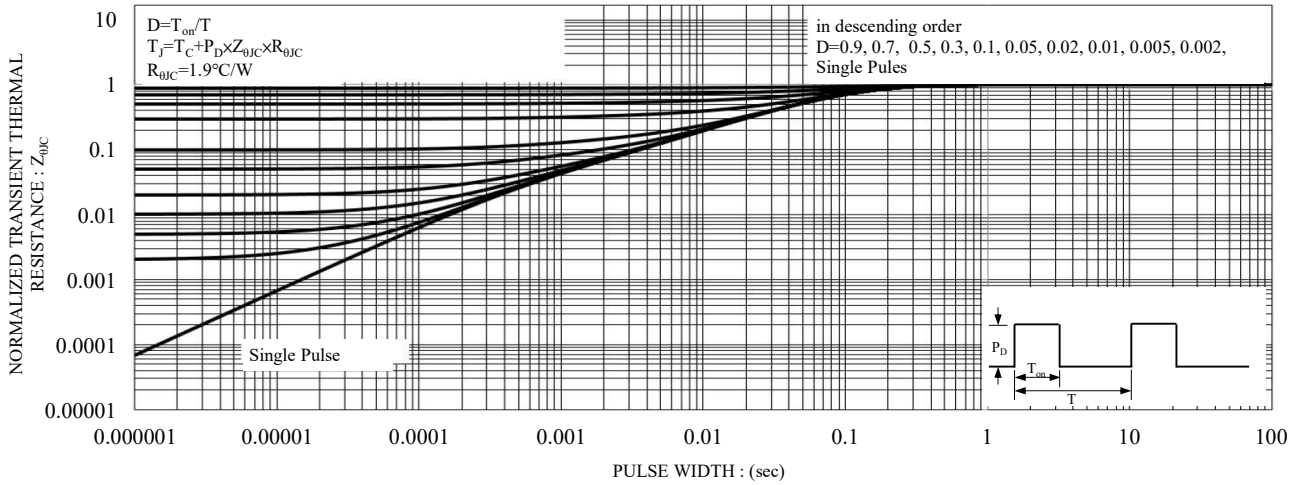


Fig.13 Maximum Transient Thermal Impedance

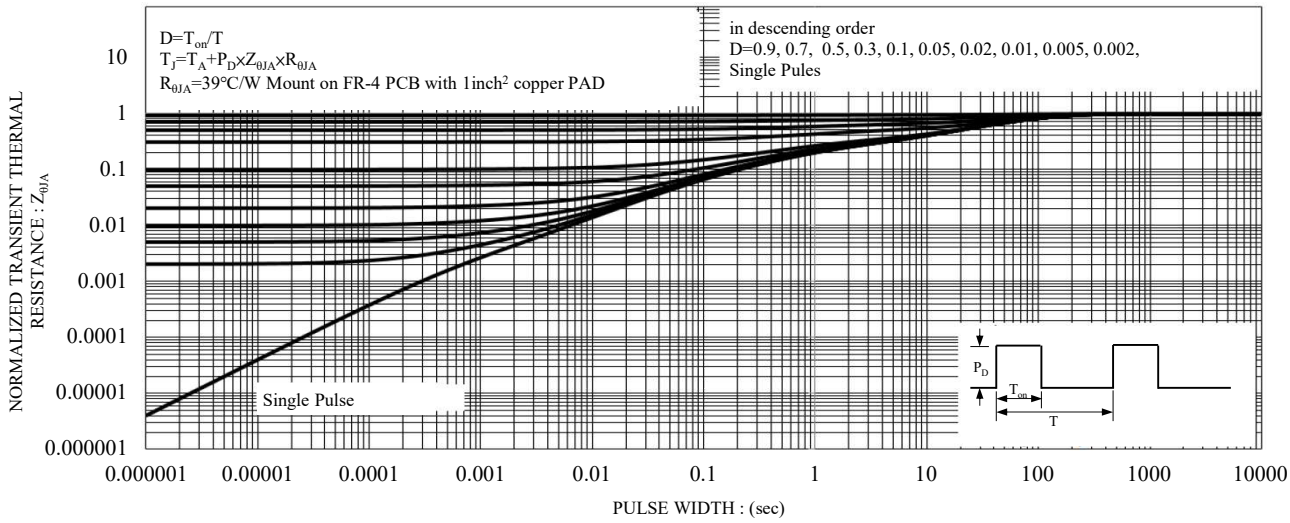
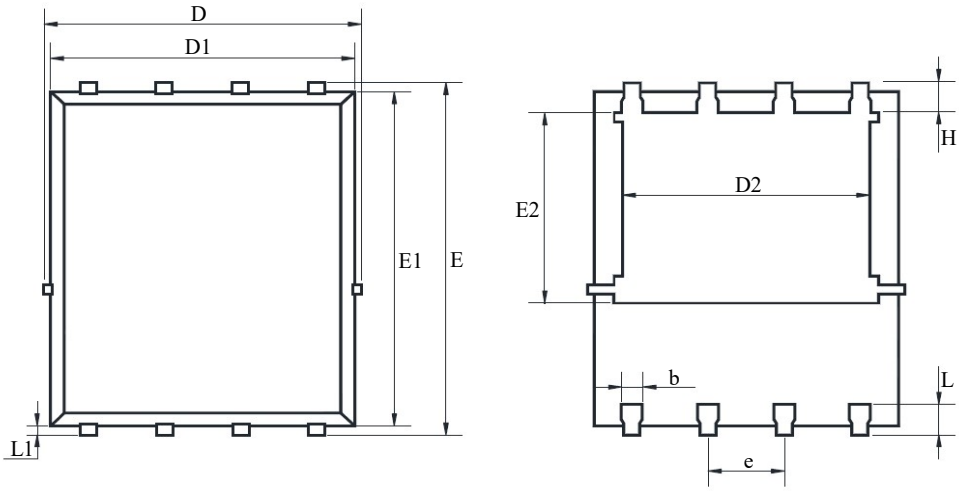


Fig.14 Maximum Transient Thermal Impedance

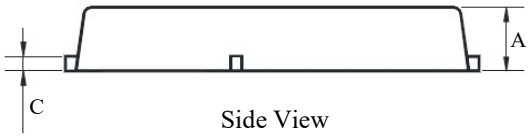
PACKAGE DIMENSION

DFN5×6-8L



Top View

Bottom View



Side View

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.12	0.035	0.044
b	0.33	0.51	0.013	0.020
C	0.11	0.34	0.004	0.013
D	4.70	5.26	0.185	0.207
D1	4.70	5.10	0.185	0.201
D2	3.56	4.50	0.140	0.177
E	5.75	6.25	0.226	0.246
E1	5.60	6.00	0.220	0.236
E2	3.18	3.66	0.125	0.144
e	1.17	1.37	0.046	0.054
L	0.35	0.71	0.014	0.028
L1	0.06	0.20	0.002	0.008
H	0.35	0.71	0.014	0.028