SHANGHAI SINO-IC
MICROELECTRONICS CO., LTD.

SE4625

Complementary Enhancement-Mode MOSFET

Revision: A

General Description

Advanced trench technology to provide excellent RDS(ON), low gate charge and low operation voltage. This device is suitable for using as a load switch or in PWM applications.

- Low $R_{DS(on)}$
- Small Package Outline
- ESD protected

Features

For N-Channel MOSFET

- V_{DS} = 12V
- $R_{DS(ON)}$ = 28mΩ@V_{GS}=4.5V

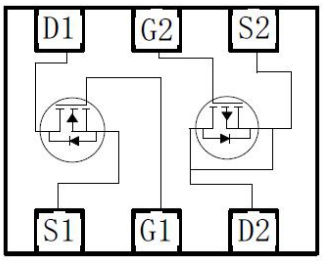
For P-Channel MOSFET

- V_{DS} = -12V
- $R_{DS(ON)}$ =57mΩ @ V_{GS}=-4.5V

Pin configurations

See Diagram below

DFN2*2-6



Absolute Maximum Ratings

Parameter		Symbol	N-Channel	P-Channel	Units
Drain-Source Voltage		V_{DS}	12	-12	V
Gate-Source Voltage		V_{GS}	±8	±8	V
Drain Current	Continuous	I_D	5.1	-4.0	A
	Pulsed		17.6	-13.6	
Total Power Dissipation	@TA=25℃	P_D	1.8		W
Operating Junction Temperature Range		T_J	-55 to 150		℃

Thermal Resistance

Parameter	Symbol	Value	Units
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	85	℃/W

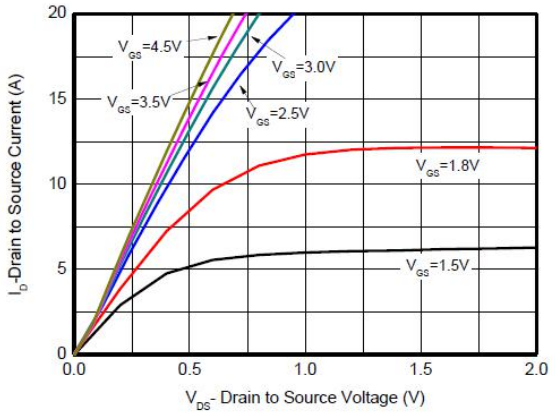
N-Channel Electrical Characteristics (TJ=25℃ unless otherwise noted)

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ**	**Max**	**Units**
OFF CHARACTERISTICS (Note 2)						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA, V_{GS}=0 V	12			V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=10V, V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±8V, V_{DS}=0V			±1	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA		0.7	1.2	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V, I_D=5.0A		28	46	mΩ
		V_{GS}=2.5V, I_D=4.6A		35	66	
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=6V, f=1MHz		469		pF
C_{oss}	Output Capacitance			125		pF
C_{rss}	Reverse Transfer Capacitance			95		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=4.5V, V_{DS}=10V, I_D=6.5A		5.38		nC
Q_{gs}	Gate Source Charge			1.3		nC
Q_{gd}	Gate Drain Charge			0.76		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=4.5V, V_{DS}=6V, R_{GEN}=1Ω I_D=5.2A		20		ns
$t_{d(off)}$	Turn-Off Delay Time			48		ns
$t_{d(r)}$	Turn-On Rise Time			22		ns
$t_{d(f)}$	Turn-Off Fall Time			15		ns

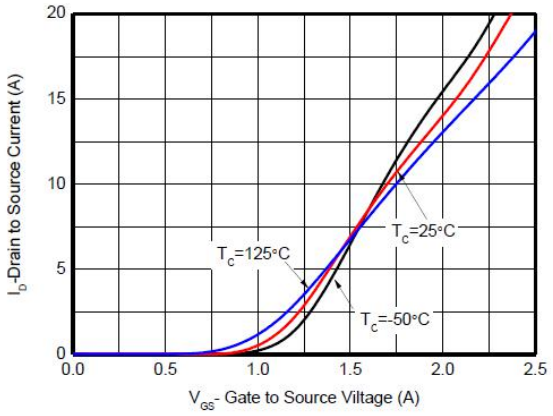
P-Channel Electrical Characteristics (TJ=25℃ unless otherwise noted)

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ**	**Max**	**Units**
OFF CHARACTERISTICS (Note 2)						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=-250μA, V_{GS}=0 V	-12			V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=10V, V_{GS}=0V			-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±8V, V_{DS}=0V			±1	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=-250μA		-0.8	-1.2	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-4.5V, I_D=-3.6A		57	75	mΩ
		V_{GS}=-2.5V, I_D=-3.2A		87	110	
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-6V, f=1MHz		673		pF
C_{oss}	Output Capacitance			175		pF
C_{rss}	Reverse Transfer Capacitance			162		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-4.3A		6.56		nC
Q_{gs}	Gate Source Charge			1.2		nC
Q_{gd}	Gate Drain Charge			2.1		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=-4.5V, V_{DS}=-6V, R_{GEN}=1Ω I_D=-3.8A		30		ns
$t_{d(off)}$	Turn-Off Delay Time			62		ns
$t_{d(r)}$	Turn-On Rise Time			32		ns
$t_{d(f)}$	Turn-Off Fall Time			18		ns

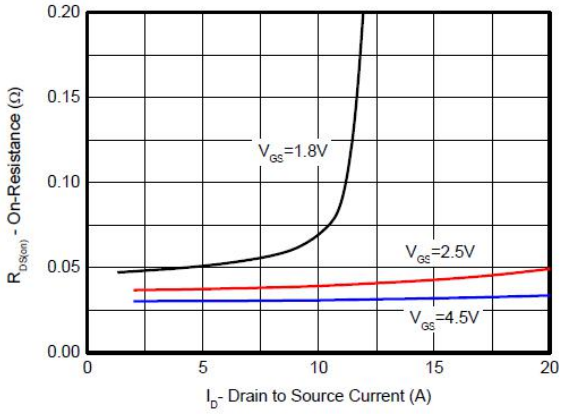
Typical Characteristics(N-Channel)



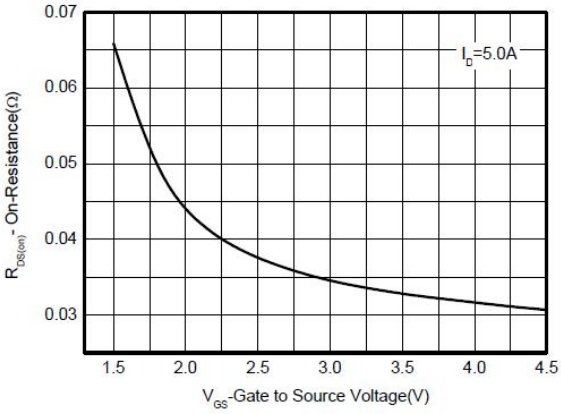
Output Characteristics



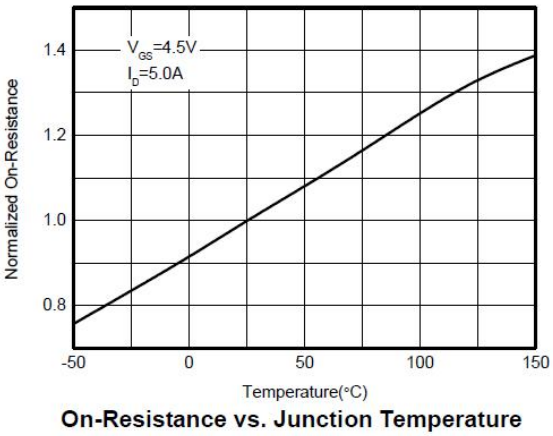
Transfer Characteristics



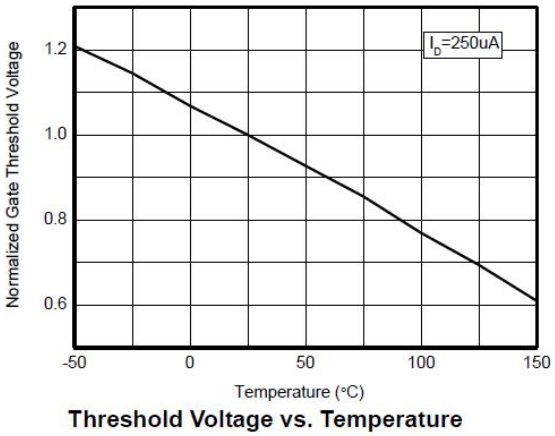
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage

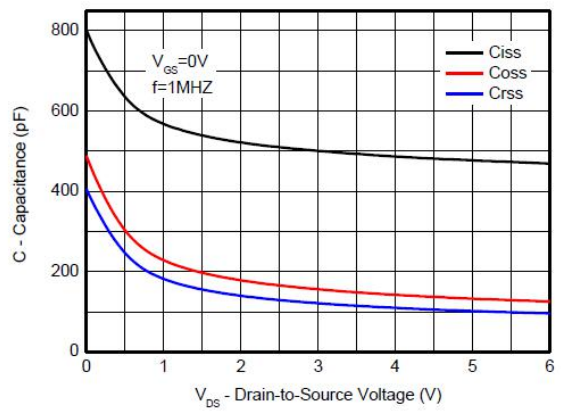


On-Resistance vs. Junction Temperature

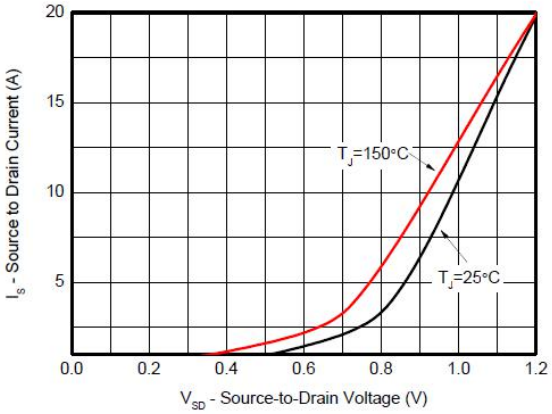


Threshold Voltage vs. Temperature

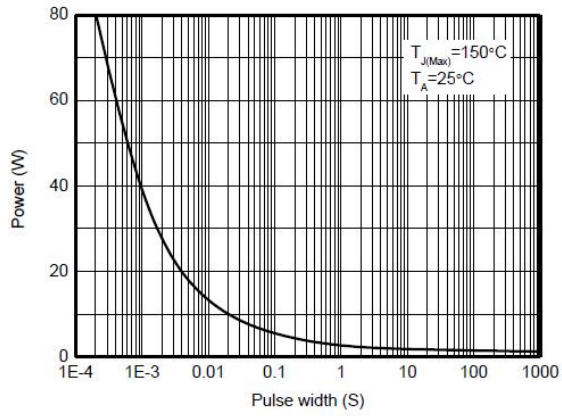
Typical Characteristics(N-Channel)



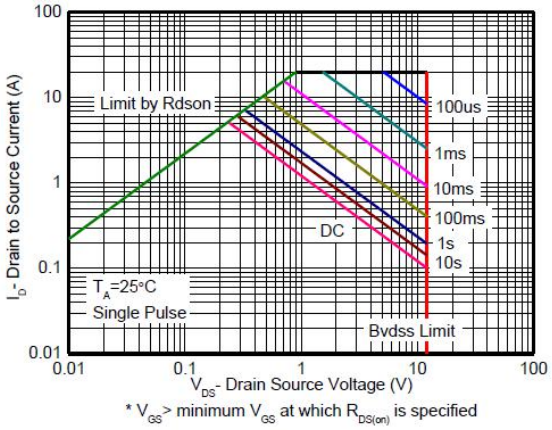
Capacitance



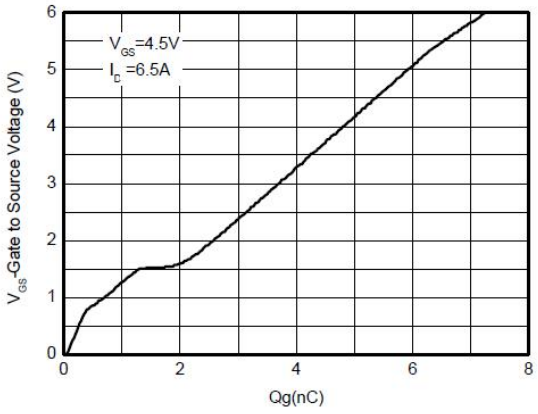
Body Diode Forward Voltage



Single pulse power

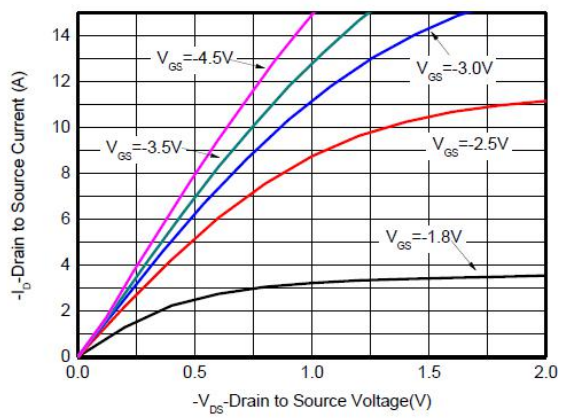


Safe operating power

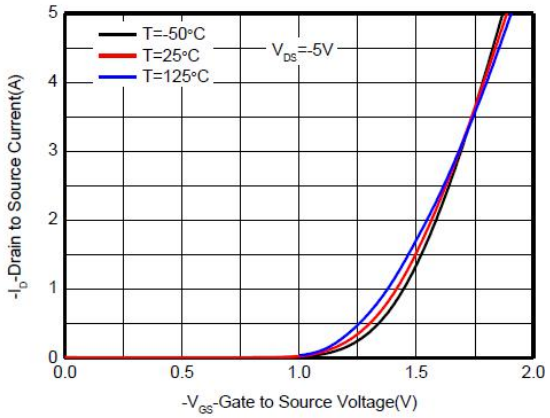


Gate charge Characteristics

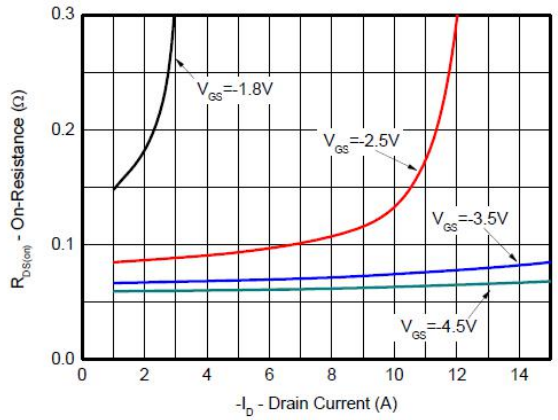
Typical Characteristics(P-Channel)



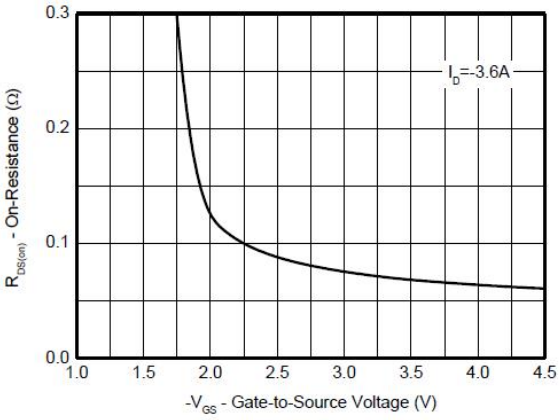
Output characteristics



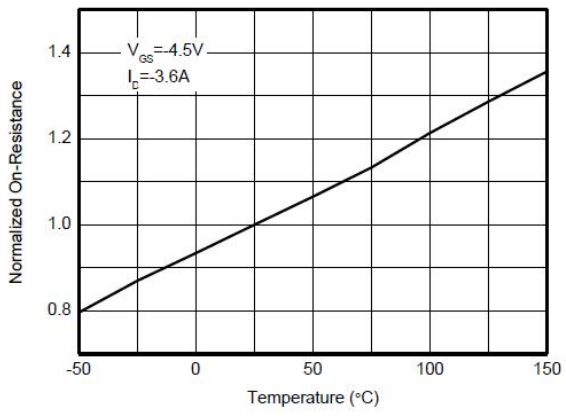
Transfer characteristics



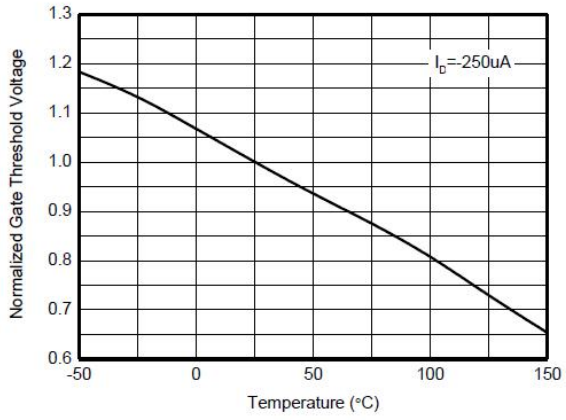
On-Resistance vs. Drain current



On-Resistance vs. Gate-to-Source voltage

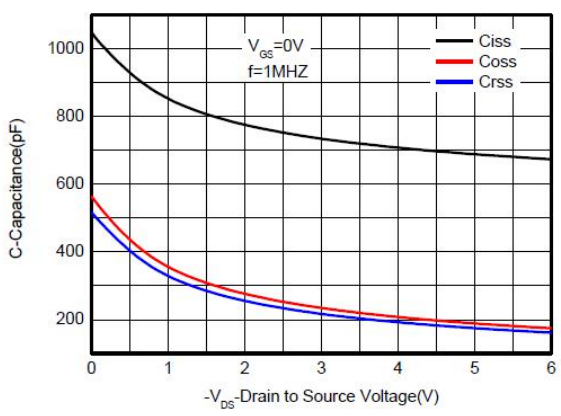


On-Resistance vs. Junction temperature

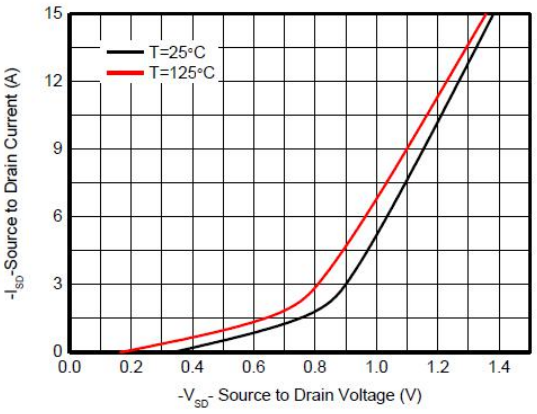


Threshold voltage vs. Temperature

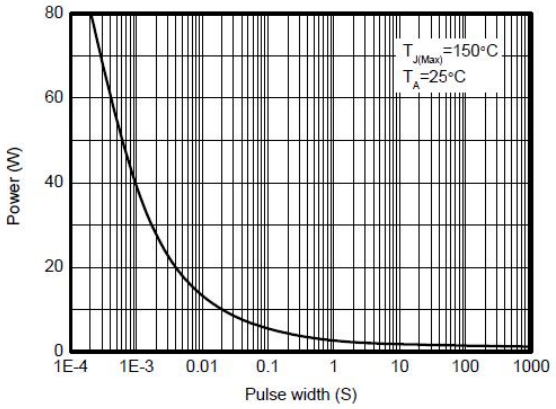
Typical Characteristics(P-Channel)



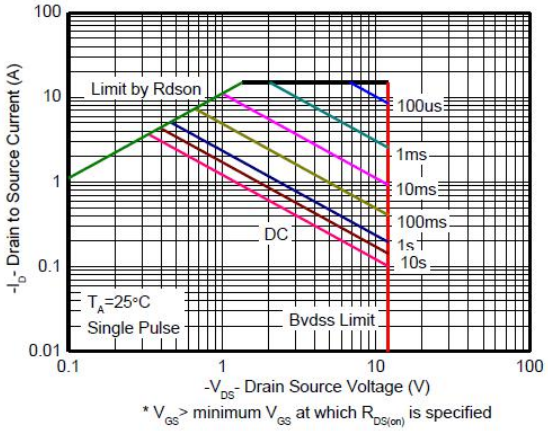
Capacitor



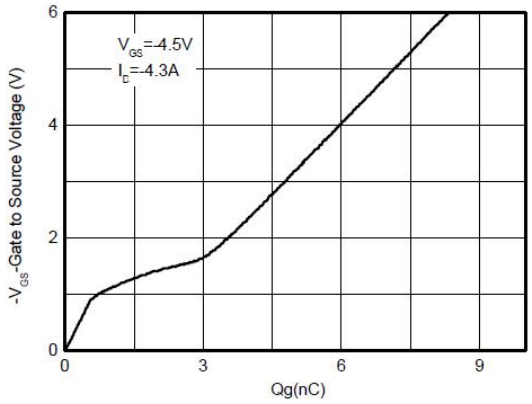
Body diode forward voltage



Single pulse power (Junction-to-ambient)



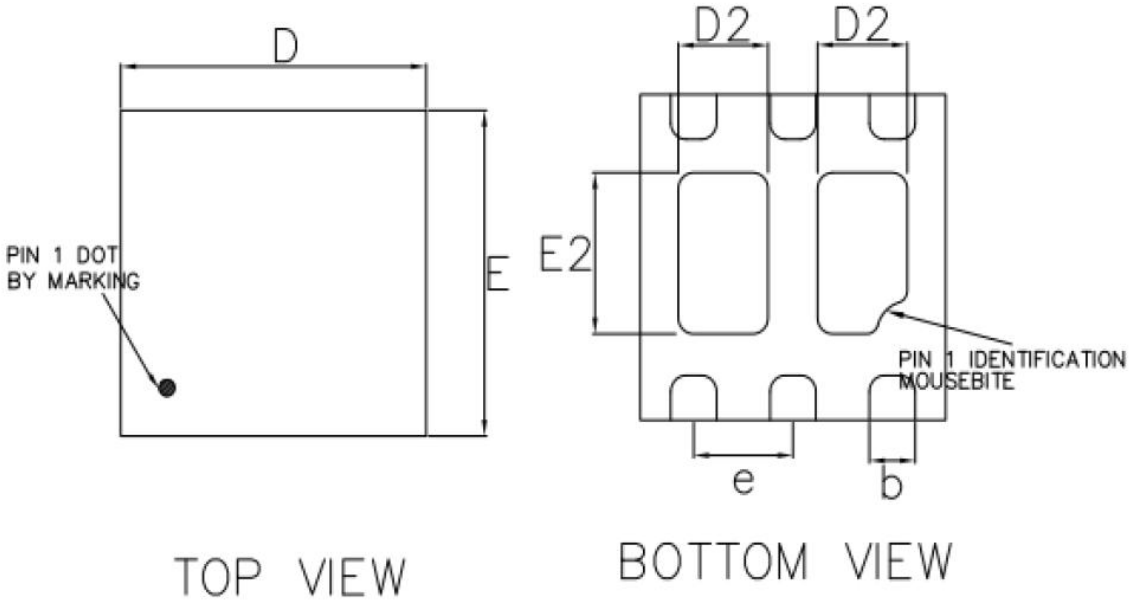
Safe operating power

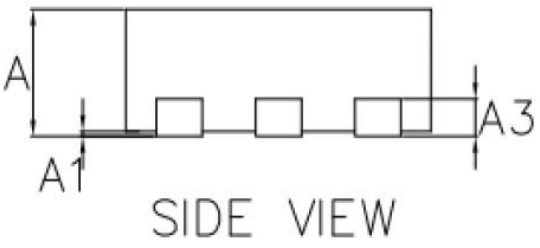


Gate charge Characteristics

Package Outline Dimension

DFN2x2-6





COMMON DIMENSIONS(MM)			
PKG.	W: VERY VERY THIN		
REF.	MIN.	NOM.	MAX
A	0.70	0.75	0.80
A1	0.00	–	0.05
A3		0.20 REF.	
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	0.44	0.59	0.69
E2	0.84	0.99	1.09
b	0.25	0.30	0.35
L	0.175	0.275	0.375
e		0.65 BSC	

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