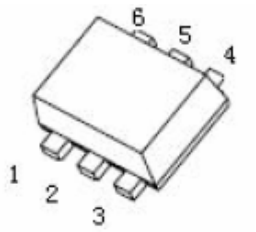
GOOD-ARK SEMICONDUCTOR

SX3439K

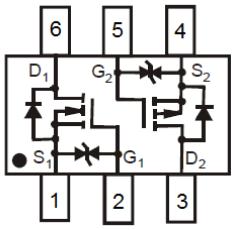
20V N+P Dual Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	20V	-20V
$R_{DS(on)}$	380mΩ@4.5V	520mΩ@-4.5V
	450mΩ@2.5V	700mΩ@-2.5V
	800mΩ@1.8V	950mΩ(TYP)@-1.8V
I_D	0.75A	-0.66A



SOT-563



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for load switching, logic level shift and battery management
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

Description

The SX3439K utilizes the latest techniques to achieve high cell density, low on-resistance and high repetitive avalanche rating. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
N-Ch MOSFET			
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[1]	I_D	0.75	A
Pulsed Drain Current (tp=10us)	I_{DM}	1.8	A
P-Ch MOSFET			
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[1]	I_D	-0.66	A
Pulsed Drain Current (tp=10us)	I_{DM}	-1.2	A
Temperature and Thermal Resistance			
Thermal Resistance from Junction to Ambient[1]	$R_{\theta JA}$	833	°C/W
Junction Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Lead Temperature for Soldering Purposes(1/8'' from case for 10 s)	T_L	260	°C

N-Channel Electrical Characteristics (T_A=25°C unless otherwise specified)

N-Ch MOSFET						
Parameter	**Symbol**	**Test Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =20V,V_{GS} = 0V	---	---	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±10V, V_{DS} = 0V	---	---	±20	uA
Gate Threshold Voltage[2]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.35	---	1.1	V
Drain-Source On-Resistance[2]	$R_{DS(on)}$	V_{GS} =4.5V, I_D =0.65A	---	---	380	mΩ
		V_{GS} =2.5V, I_D =0.55A	---	---	450	mΩ
		V_{GS} =1.8V, I_D =0.45A	---	---	800	mΩ
Forward Tranconductance[2]	g_{FS}	V_{DS} =10V, I_D =0.8A	---	1.6	---	S
Diode Forward Voltage	V_{SD}	I_S=0.15A, V_{GS} = 0V	---	---	1.2	V
Dynamic Characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =16V,V_{GS} =0V,f =1MHz	---	79	120	pF
Output Capacitance	C_{oss}		---	13	20	pF
Reverse Transfer Capacitance	C_{rss}		---	9	15	pF
Switching Characteristics[3,4]						
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=4.5V,V_{DS}=10V, I_D=500mA,R_{GEN}=10Ω	---	6.7	---	ns
Turn-On Rise Time	t_r		---	4.8	---	ns
Turn-Off Delay Time	$t_{d(off)}$		---	17.3	---	ns
Turn-Off Fall Time	t_f		---	7.4	---	ns

P-Channel Electrical Characteristics (T_A=25°C unless otherwise specified)

P-Ch MOSFET						
Parameter	**Symbol**	**Test Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-20	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20V,V_{GS} = 0V	---	---	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±10V, V_{DS} = 0V	---	---	±20	uA
Gate Threshold Voltage[2]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.35	---	-1.1	V
Drain-Source On-Resistance[2]	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-1A	---	---	520	mΩ
		V_{GS} =-2.5V, I_D =-0.8A	---	---	700	mΩ
		V_{GS} =-1.8V, I_D =-0.5A	---	950	---	mΩ
Forward Tranconductance[2]	g_{FS}	V_{DS} =-10V, I_D =-0.54A	---	1.2	---	S
Diode Forward Voltage	V_{SD}	I_S=-0.5A, V_{GS} = 0V	---	---	-1.2	V
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =-16V,V_{GS} =0V,f =1MHz	---	113	170	pF
Output Capacitance	C_{oss}		---	15	25	pF
Reverse Transfer Capacitance	C_{rss}		---	9	15	pF
Switching Characteristics[3]						
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=-4.5V,V_{DS}=-10V, I_D=-200mA,R_{GEN}=10Ω	---	9	---	ns
Turn-On Rise Time	t_r		---	5.8	---	ns
Turn-Off Delay Time	$t_{d(off)}$		---	32.7	---	ns
Turn-Off Fall Time	t_f		---	20.3	---	ns

Notes :

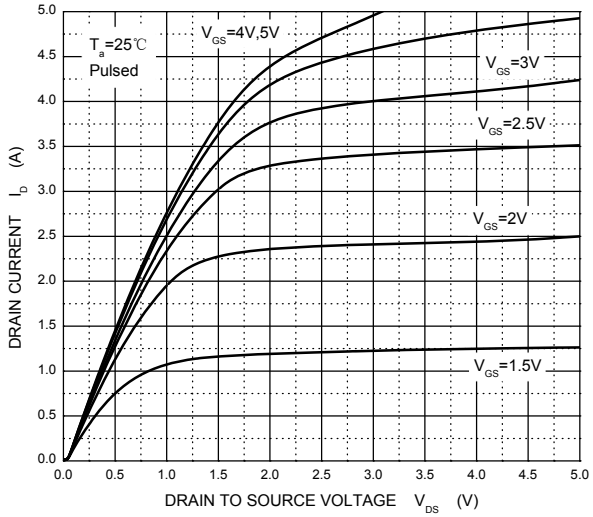
1.Surface mounted on FR4 board using the minimum recommended pad size.

2. Pulse Test : Pulse width=300μs, duty cycle≤2%.

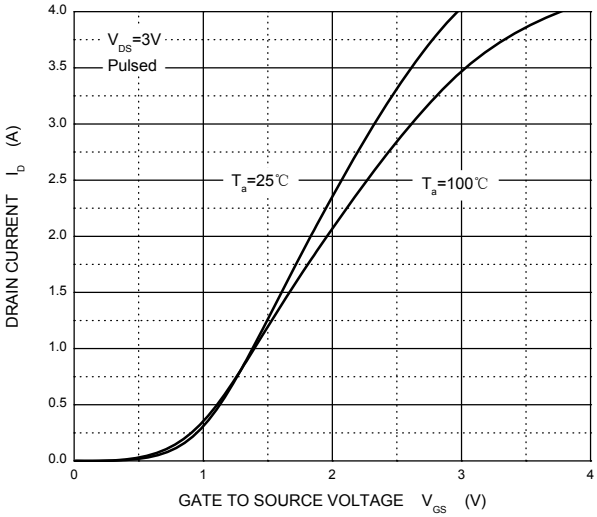
3. Switching characteristics are independent of operating junction temperature.

N-Channel Typical Electrical and Thermal Characteristic Curves

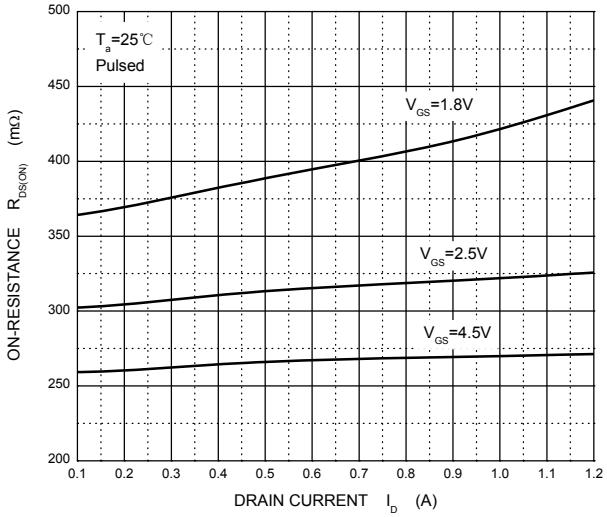
Output Characteristics



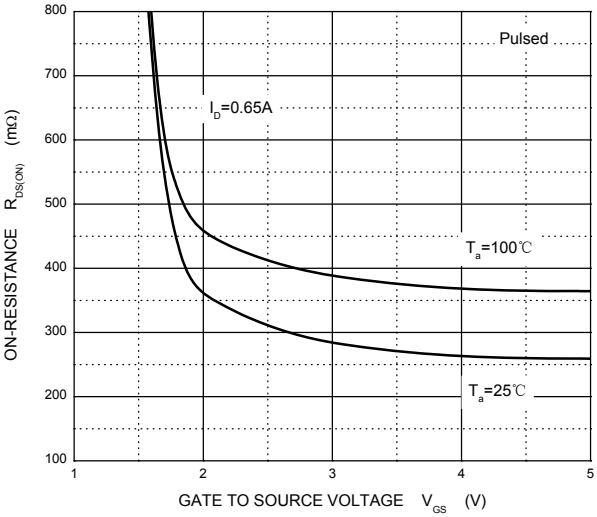
Transfer Characteristics



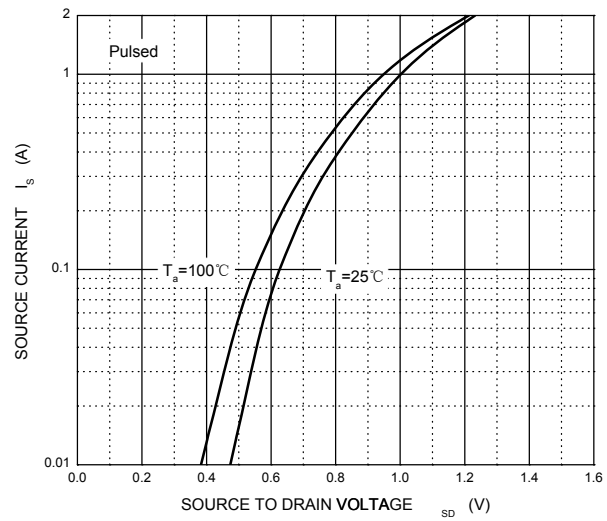
$R_{DS(ON)}$ — I_D



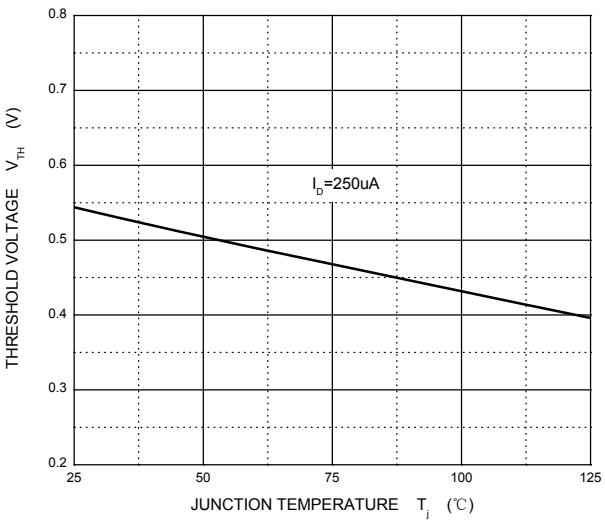
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

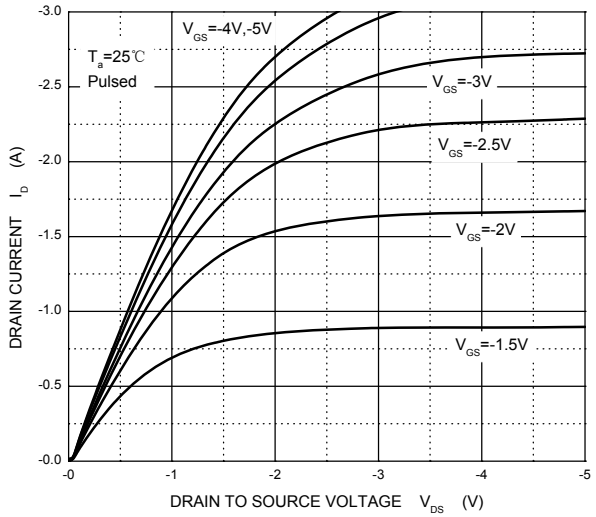


Threshold Voltage

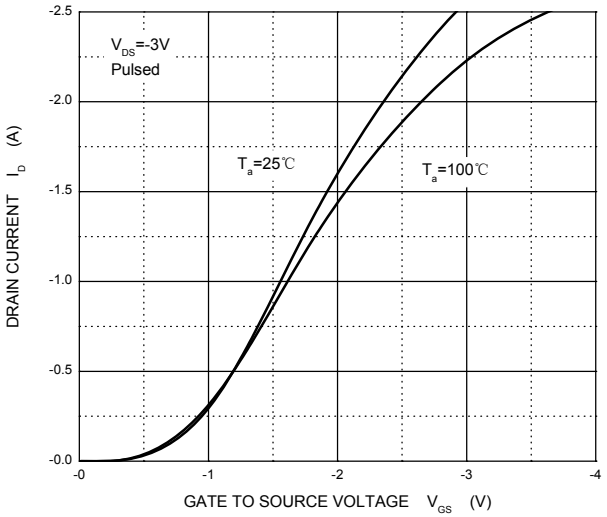


P-Channel Typical Electrical and Thermal Characteristic Curves

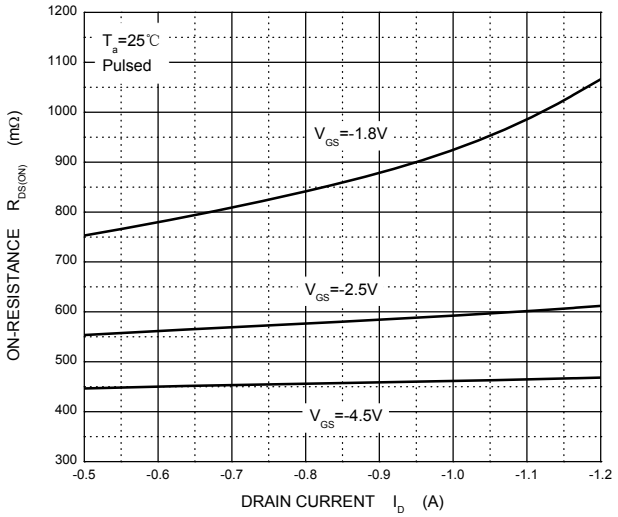
Output Characteristics



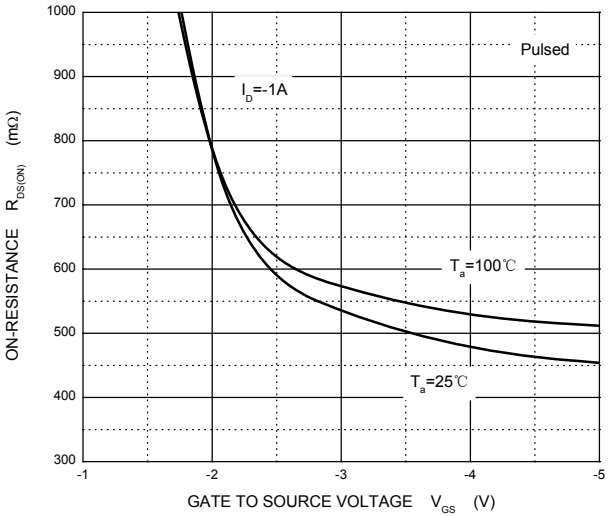
Transfer Characteristics



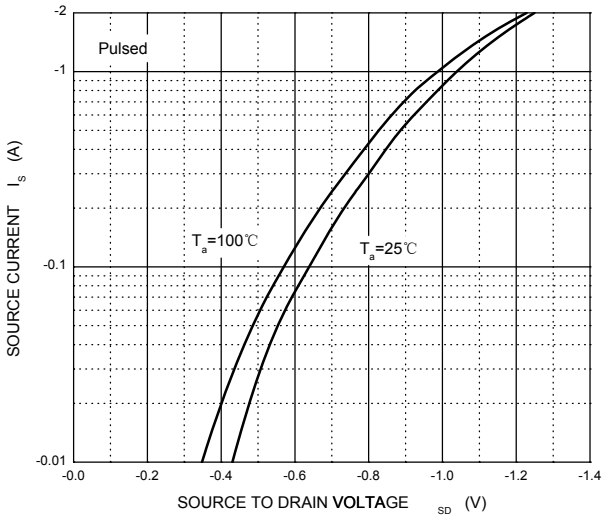
$R_{DS(ON)}$ — I_D



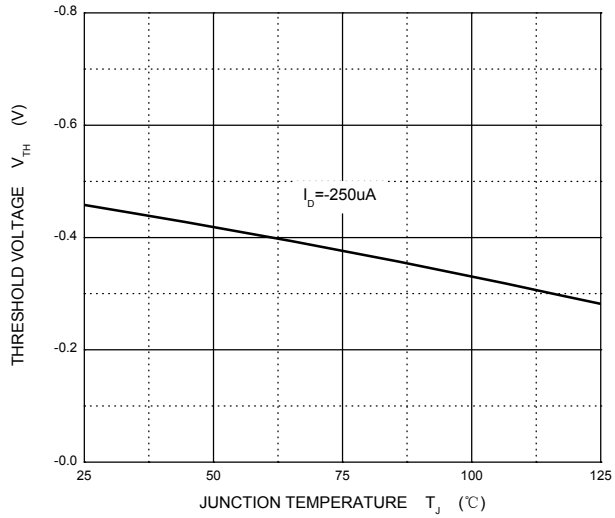
$R_{DS(ON)}$ — V_{GS}



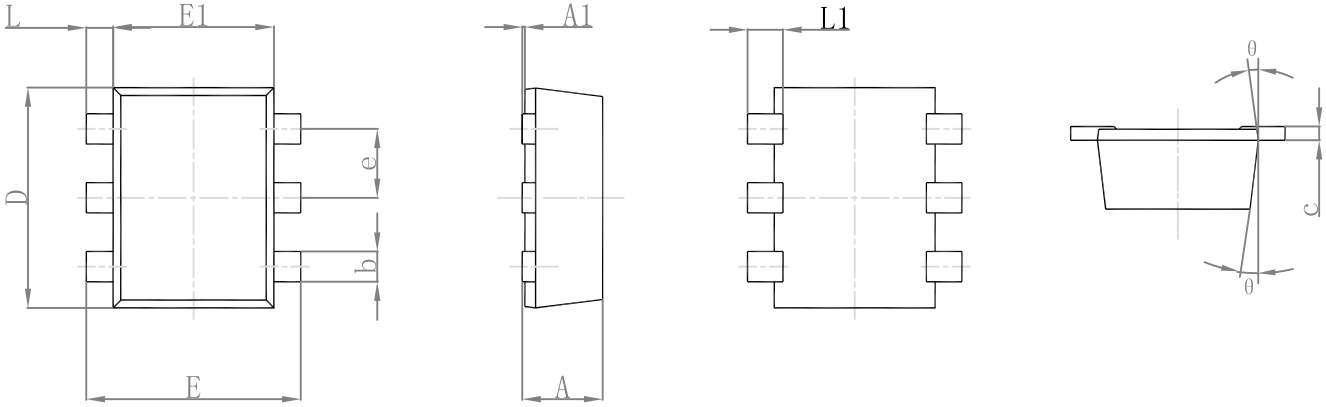
I_S — V_{SD}



Threshold Voltage

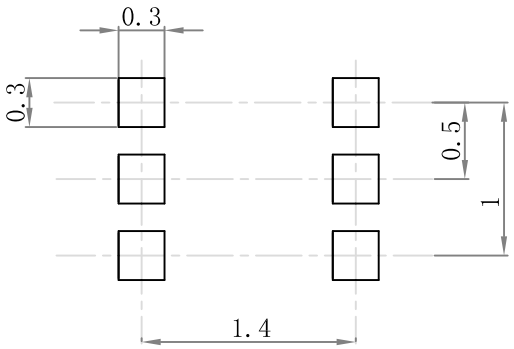


Package Outline Dimensions SOT-563



Symbol	Dimensions In Millimeters		Dimensions in inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016
θ	7 °REF.		7 °REF.	

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

Order Information

Device	Package	Marking	Carrier	Quantity	HSF Status
SX3439K	SOT-563	49K	Tape & Reel	3000pcs/Reel	RoHS compliant