

P-Channel Enhancement Mode MOSFET with Schottky Diode

- **Features**

P-MOSFET			
VDS	VGS	RDSon TYP	ID
-20V	±8V	130mR@-4V5	-2A
		170mR@-2V5	
		230mR@-1V8	

Schottky			
VR	IR	VF	IO
20V	15uA	370mV	1A

- **General Description**

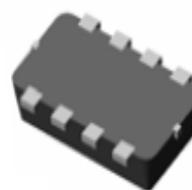
SSC8K21JN3 combines a P-Channel enhancement mode power MOSFET which is produced with high cell density and DMOS trench technology and a low forward voltage schottky diode. the tiny and thin outline saves PCB consumption.

- **Package Information**

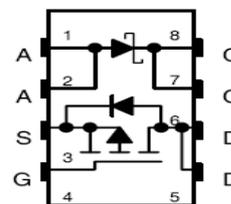
- **Applications**

- Li Battery Charging
- High Side DC/DC Converter
- High Side Driver for Brushless DC Motor
- Power Management in Portable, Battery Powered Devices

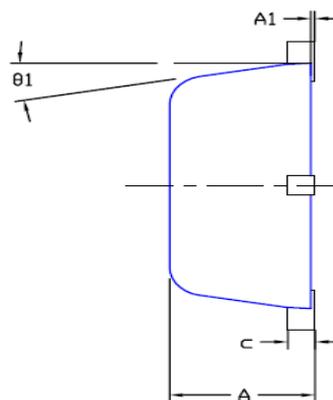
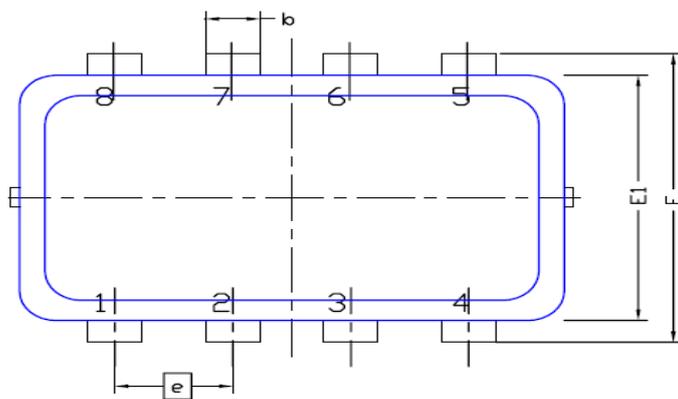
- **Pin configuration**



DFN3X2-8L

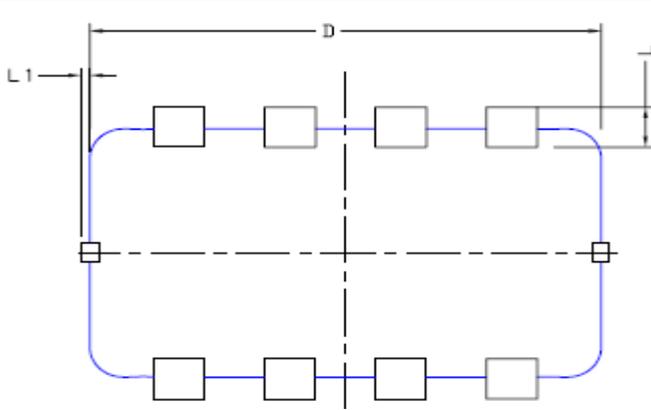


Pin connections





SSC8K21JN3



DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.80	0.900	0.0276	0.0315	0.0354
A1	0.00	---	0.05	0.000	---	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.08	0.152	0.25	0.003	0.006	0.010
D	3.00 BSC			0.118 BSC		
E	2.00 BSC			0.079 BSC		
E1	1.70 BSC			0.067 BSC		
e	0.65 BSC			0.026 BSC		
L	0.20	0.275	0.400	0.008	0.011	0.0157
L1	0	---	0.100	0	---	0.004
θ1	0°	10°	12°	0°	10°	12°



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● **Absolute Maximum Ratings @ TA = 25°C unless otherwise specified**

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	
Drain Current (Note 1)	Continuous	I_D	-2	A
	Pulsed		-8	
Schottky Reverse Voltage		V_R	20	V
Schottky Continuous Forward Current		I_F	1	A
Power Dissipation Derating above $T_A = 25^\circ\text{C}$ (Note 1)		P_d	1.2	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Note: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inches. The rating is for each chip in the package.

● **Electrical Characteristics @ TA = 25°C unless otherwise specified**

Parameter (Note 2)	Symbol	Test Conditions	Min	Typ	Max	Unit
P-channel Enhancement Mode MOSFET						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$	--	--	-1	uA
Gate-Body Leakage	I_{GSS}	$V_{GS} = \pm 8V, V_{DS} = 0V$	--	--	±100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.5	-0.7	-1.2	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$I_D = -1A, V_{GS} = -4.50V$	--	130	190	mR
		$I_D = -1A, V_{GS} = -2.50V$	--	170	250	
		$I_D = -1A, V_{GS} = -1.80V$	--	230	500	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -6V, R_L = 6R, I_D = -1A,$ $V_{GEN} = -4.5V, R_G = 6R$	--	20	--	ns
Turn-On Rise Time	t_r		--	18	--	
Turn-Off Delay Time	$t_{d(off)}$		--	300	--	
Turn-Off Fall Time	t_f		--	120	--	
Input Capacitance	C_{ISS}	$V_{DS} = -6V, V_{GS} = 0V,$ $f = 1.0\text{ MHz}$	--	450	--	pF
Output Capacitance	C_{OSS}		--	180	--	
Reverse Transfer Capacitance	C_{RSS}		--	90	--	
Schottky Diode						
Breakdown Voltage	V_R	$I_R = 300\mu A$	20	--	--	V
Forward Voltage Drop	V_F	$I_F = 0.5A$	--	0.37	0.45	V
Maximum reverse leakage current	I_R	$V_R = 20V$	--	15	200	uA

Note : 2. Short duration test pulse used to minimize self-heating effect.

● P-channel MOSFET Typical Performance Characteristics

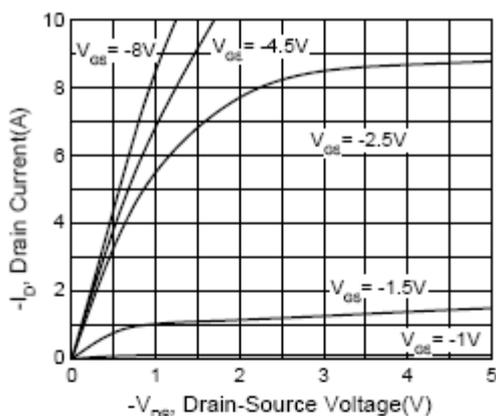


Fig1. Output Characteristics

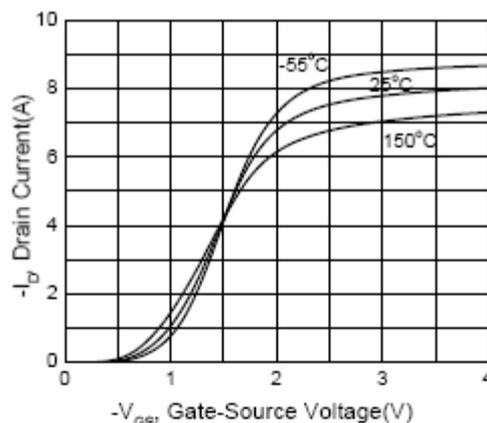


Fig2. Transfer Characteristics

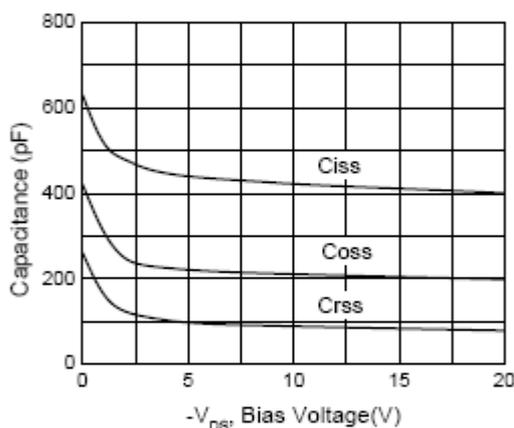


Fig3. Capacitance

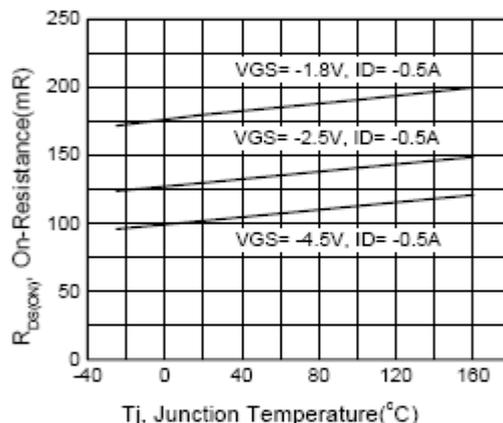


Fig4. On-Resistance vs. Temperature

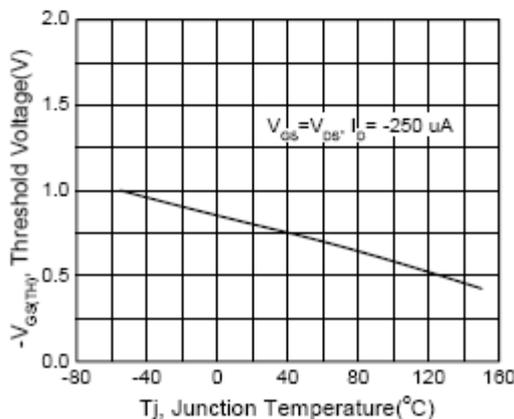


Fig 5. Threshold Voltage

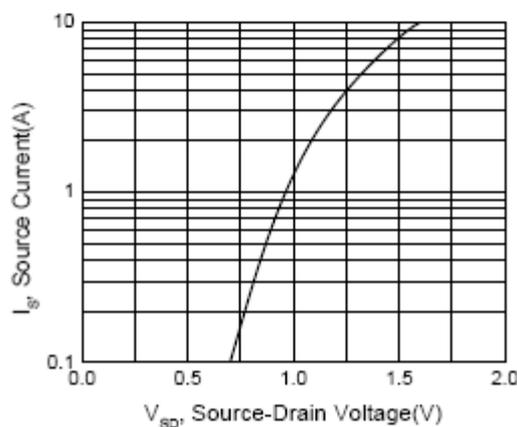


Fig6. Diode Forward Characteristics

- Schottky Diode Typical Performance Characteristics

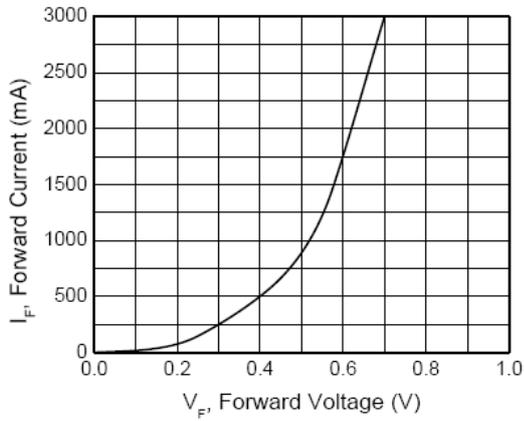


Fig7. Forward Characteristics

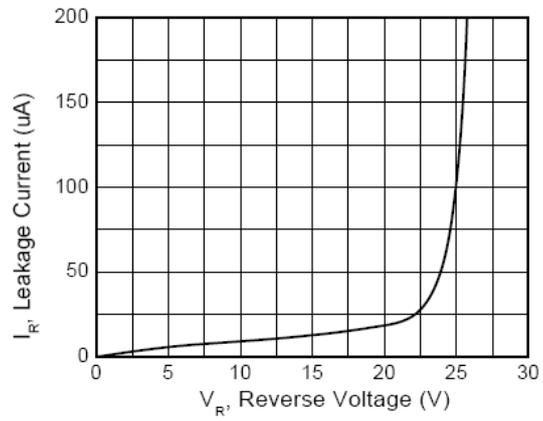


Fig8. Reverse Characteristics

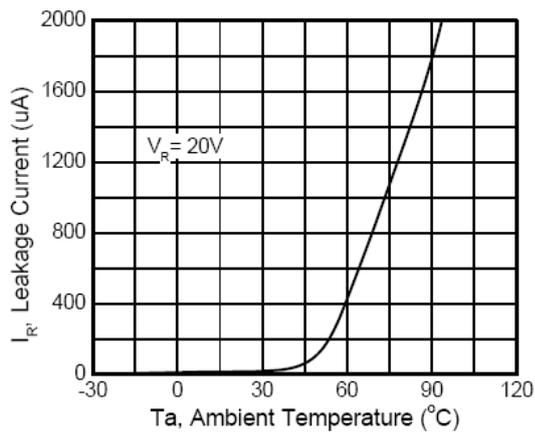


Fig9. Leakage vs. Temperature



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