

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

DESCRIPTIONS

The SSI2154 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, load switch and level shift.

MECHANICAL DATA

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage

APPLICATION

- DC-DC converter circuit
- Load Switch

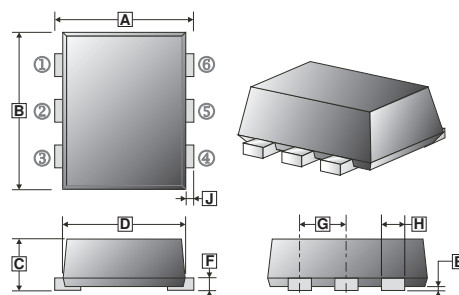
DEVICE MARKING:

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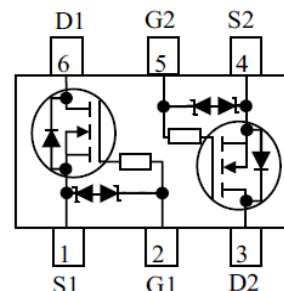
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-563	3K	7' inch

SOT-563



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.50	1.70	F	0.09	0.16
B	1.50	1.70	G	0.45	0.55
C	0.525	0.60	H	0.17	0.27
D	1.10	1.30	J	0.10	0.30
E	-	0.05			



MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Rating		Unit
			10S	Steady State	
Drain – Source Voltage		V_{DS}	20		V
Gate – Source Voltage		V_{GS}	± 6		V
Continuous Drain Current ¹	$T_A = 25^\circ\text{C}$	I_D	0.88	0.8	A
	$T_A = 70^\circ\text{C}$		0.71	0.64	
Power Dissipation ¹	$T_A = 25^\circ\text{C}$	P_D	0.37	0.3	W
	$T_A = 70^\circ\text{C}$		0.23	0.19	
Continuous Drain Current ²	$T_A = 25^\circ\text{C}$	I_D	0.76	0.69	A
	$T_A = 70^\circ\text{C}$		0.6	0.55	
Power Dissipation ²	$T_A = 25^\circ\text{C}$	P_D	0.27	0.22	W
	$T_A = 70^\circ\text{C}$		0.17	0.14	
Pulsed Drain Current ³		I_{DM}	1.4		A
Maximum Junction-to-Lead		$R_{\theta JL}$	260		$^\circ\text{C} / \text{W}$
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Rating		Unit
			Typ.	Max.	
Single Operation					
Junction-to-Ambient Thermal Resistance ¹	T ≤ 10S	R _{θJA}	285	335	℃ / W
	Steady State		340	405	
Junction-to-Ambient Thermal Resistance ²	T ≤ 10S	R _{θJA}	385	450	
	Steady State		455	545	
Junction-to-Case Thermal Resistance	Steady State	R _{θJC}	260	300	
Dual Operation					
Junction-to-Ambient Thermal Resistance ¹	T ≤ 10S	R _{θJA}	315	365	℃ / W
	Steady State		370	440	
Junction-to-Ambient Thermal Resistance ²	T ≤ 10S	R _{θJA}	420	490	
	Steady State		505	585	
Junction-to-Case Thermal Resistance	Steady State	R _{θJC}	265	305	

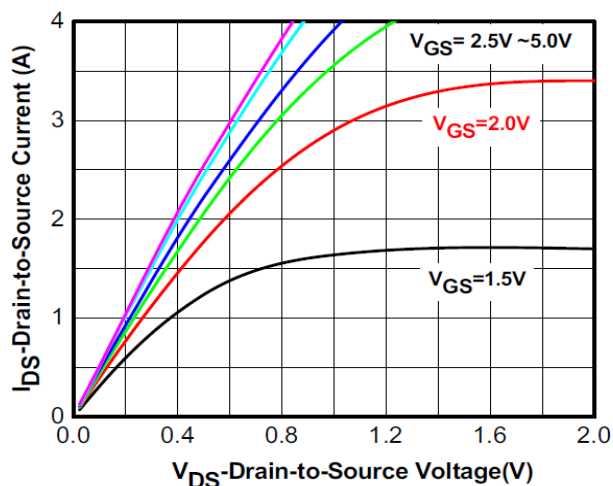
Note:

1. Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper.
2. Surface mounted on FR4 board using minimum pad size, 1oz copper
3. Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu s$, Duty Cycle=1%
4. Repetitive rating, pulse width limited by junction temperature $T_J=150^\circ C$.

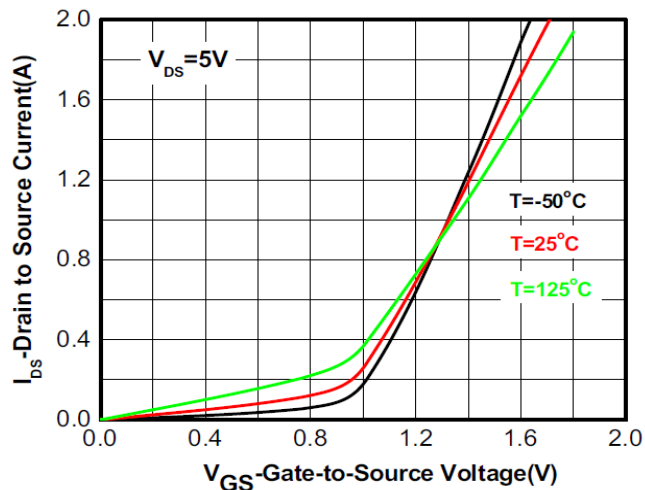
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	20	-	-	V	$V_{GS}=0, I_D=250\mu A$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS}=16V, V_{GS}=0$
Gate-Source Leakage	I_{GSS}	-	-	± 5	μA	$V_{DS}=0, V_{GS}= \pm 5V$
Gate-Threshold Voltage	$V_{GS(TH)}$	0.45	0.58	0.85	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-Source On Resistance	$R_{DS(ON)}$	-	220	310	m Ω	$V_{GS}=4.5V, I_D=0.55A$
		-	260	360		$V_{GS}=2.5V, I_D=0.45A$
		-	320	460		$V_{GS}=1.8V, I_D=0.35A$
Forward Transconductance	g_{FS}	-	2	-	S	$V_{DS}=5V, I_D= 0.55A$
Body-Drain Diode Ratings						
Diode Forward On-Voltage	V_{SD}	0.5	0.7	1.5	V	$I_S=350mA, V_{GS}=0$
Dynamic Characteristics						
Input Capacitance	C_{ISS}	-	60	-	pF	$V_{DS}=10V, V_{GS}=0, f=100KHz$
Output Capacitance	C_{OSS}	-	11	-		
Reverse Transfer Capacitance	C_{RSS}	-	7.5	-		
Total Gate Charge	$Q_{G(TOT)}$	-	1.15	-	nC	$V_{DS}=10V, V_{GS}=4.5V, I_D=0.55A$
Threshold Gate Charge	$Q_{G(TH)}$	-	0.06	-		
Gate-to-Source Charge	Q_{GS}	-	0.15	-		
Gate-to-Drain Charge	Q_{GD}	-	0.23	-		
Turn-on Delay Time	$T_{d(ON)}$	-	22	-	nS	$V_{DD}=10V, I_D=0.55A, V_{GS}=4.5V, R_G=6\Omega.$
Rise Time	T_r	-	80	-		
Turn-off Delay Time	$T_{d(OFF)}$	-	700	-		
Fall Time	T_f	-	380	-		

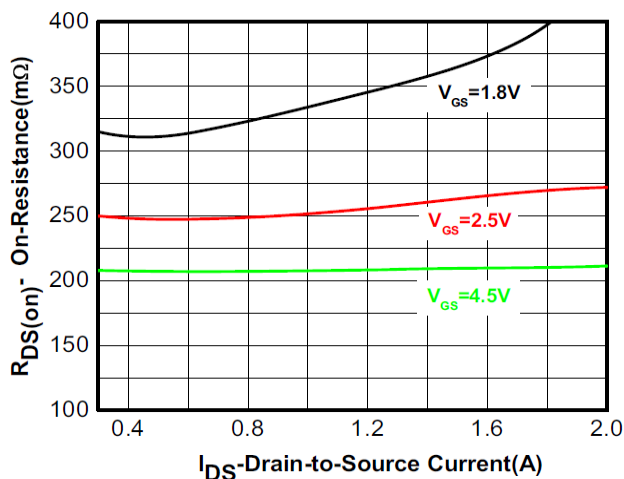
CHARACTERISTIC CURVES



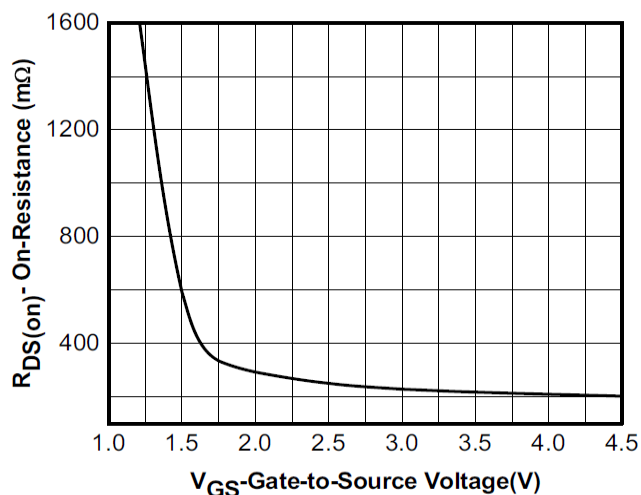
Output characteristics



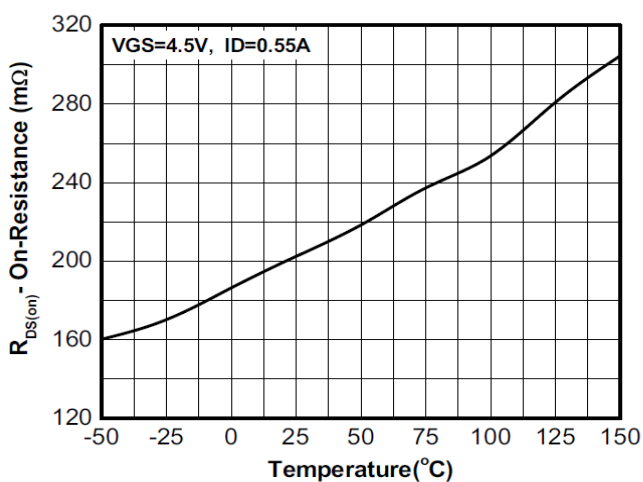
Transfer characteristics



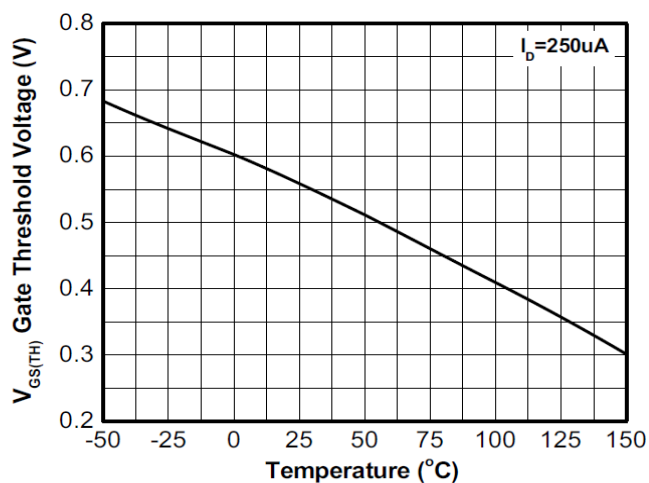
On-Resistance vs. Drain current



On-Resistance vs. Gate-to-Source voltage



On-Resistance vs. Junction temperature



Threshold voltage vs. Temperature

CHARACTERISTIC CURVES

