

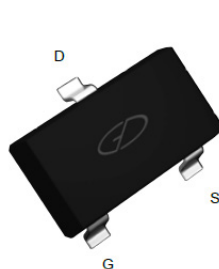


**THE DATASHEET OF**  
**SSF1341**

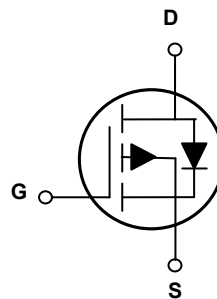


### Main Product Characteristics

$V_{(BR)DSS}$	-12V
$R_{DS(ON)}$	50m $\Omega$
$I_D$	-3.5A



SOT-23



Schematic Diagram

### Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

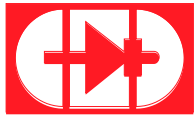


### Description

The SSF1341 utilizes the latest techniques to achieve ultra high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in battery protection, load switch, power management and a wide variety of other applications.

### Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	-12	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Drain Current-Continuous ( $T_C=25^{\circ}\text{C}$ ) <sup>1</sup>	$I_D$	-3.5	A
Drain Current-Continuous ( $T_C=70^{\circ}\text{C}$ ) <sup>1</sup>		-2.6	A
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	-14	A
Power Dissipation	$P_D$	1.25	W
Thermal Resistance, Junction-to-Ambient <sup>2</sup>	$R_{\theta JA}$	100	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^{\circ}\text{C}$

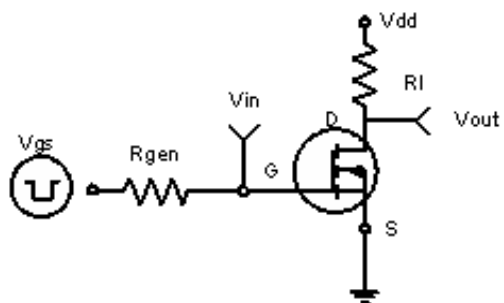

**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-12	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-12V, V_{GS}=0V$	-	-	-1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics<sup>3</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.4	-	-1	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-3.5A$	-	41	50	m $\Omega$
		$V_{GS}=-2.5V, I_D=-3A$	-	51	85	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-2.8A$	8	-	-	S
<b>Dynamic and Switching Characteristics<sup>4</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-8V, V_{GS}=0V, F=1MHz$	-	1000	-	pF
Output Capacitance	$C_{oss}$		-	200	-	
Reverse Transfer Capacitance	$C_{rss}$		-	150	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-10V, I_D=-1A, R_{GEN}=6\Omega, V_{GS}=-4.5V$	-	20	29	nS
Rise Time	$t_r$		-	19	30	
Turn-Off Delay Time	$t_{d(off)}$		-	39	58	
Fall Time	$t_f$		-	9	15	
Total Gate Charge	$Q_g$	$V_{DS}=-8V, I_D=-3.5A, V_{GS}=-4.5V$	-	12	17	nC
Gate-Source Charge	$Q_{gs}$		-	1.5	-	
Gate-Drain Charge	$Q_{gd}$		-	3	-	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Diode Forward Voltage <sup>3</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-1.7A$	-	-0.8	-1.2	V

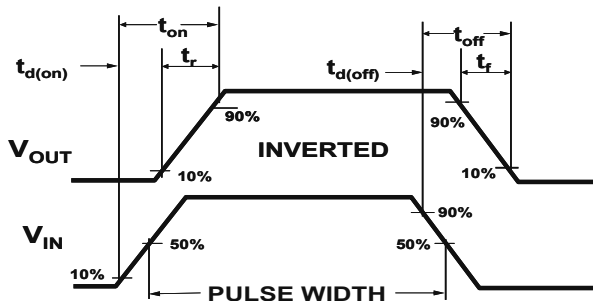
**NOTES:**

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Surface Mounted on 1in<sup>2</sup> FR4 Board,  $t \leq 10$  sec.
3. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing.

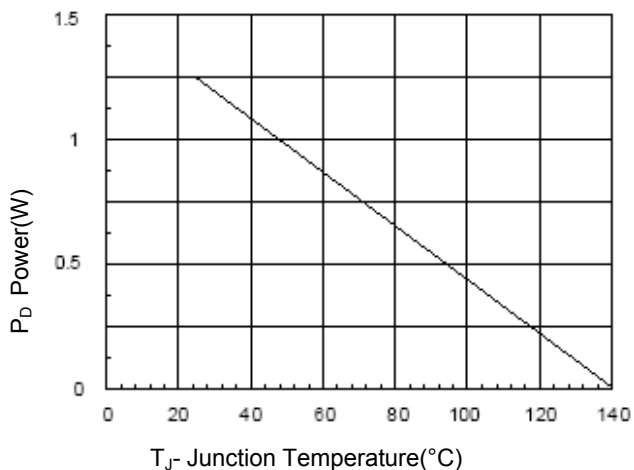
**Typical Electrical and Thermal Characteristic Curves**



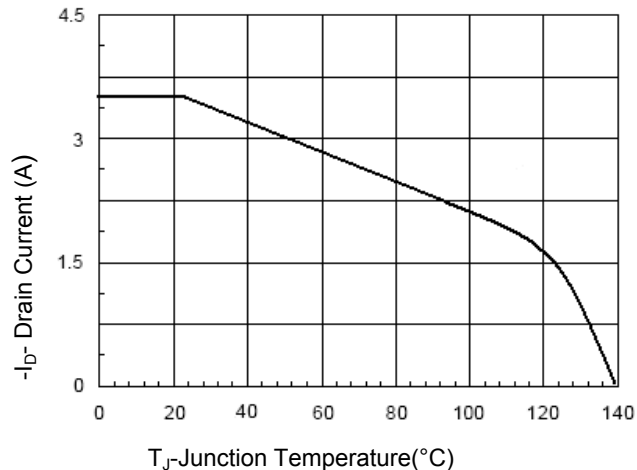
**Figure 1. Switching Test Circuit**



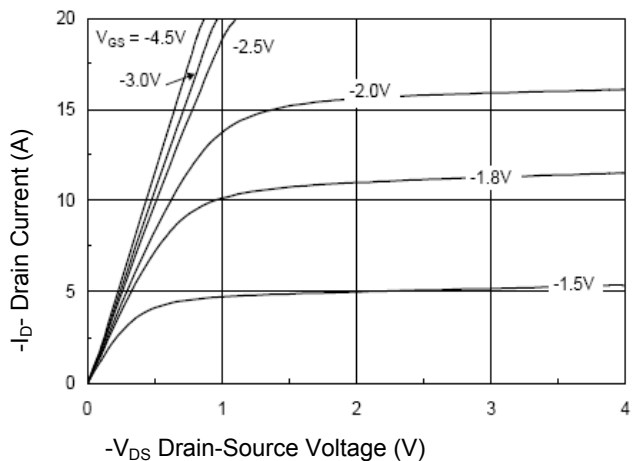
**Figure 2. Switching Waveforms**



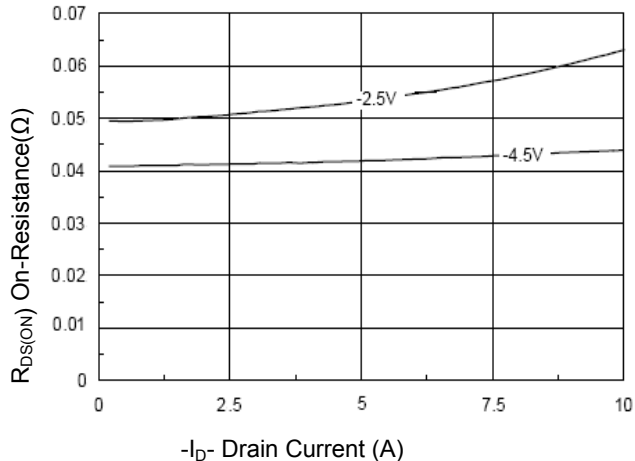
**Figure 3. Power Dissipation**



**Figure 4. Drain Current vs Junction Temperature**

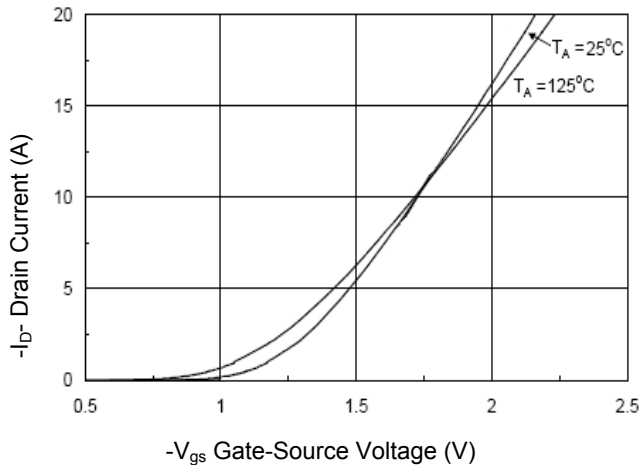


**Figure 5. Output Characteristics**

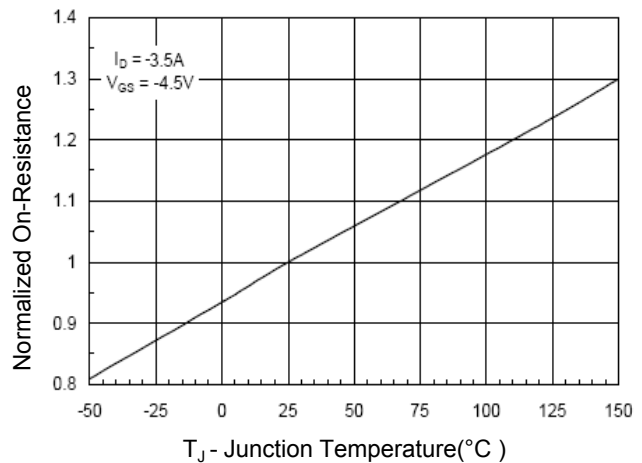


**Figure 6. Drain-Source On-Resistance**

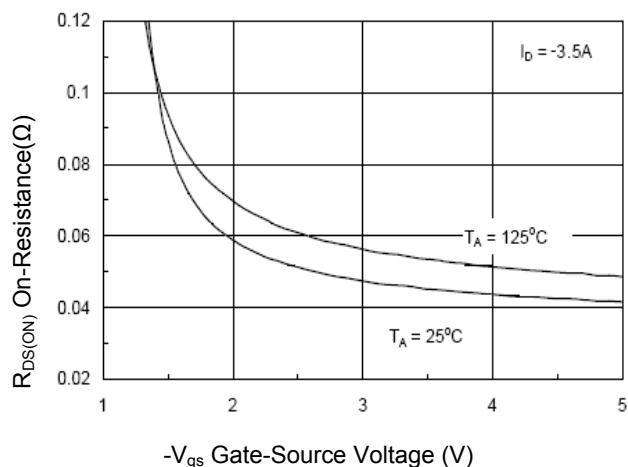
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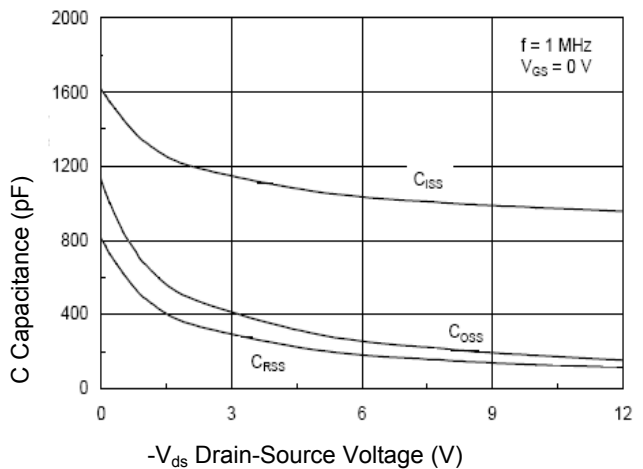
**Figure 7. Transfer Characteristics**



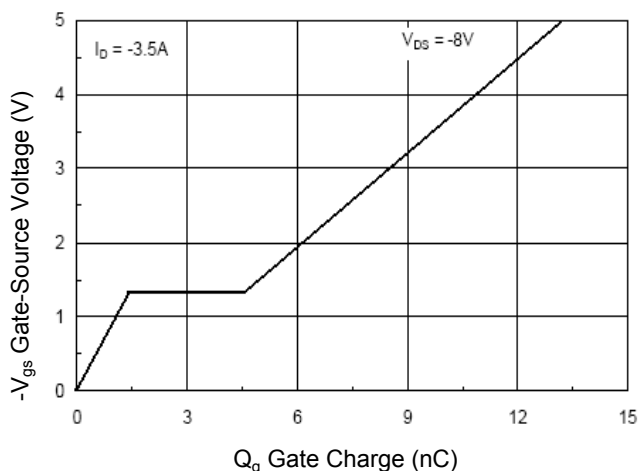
**Figure 8. Drain-Source On-Resistance**



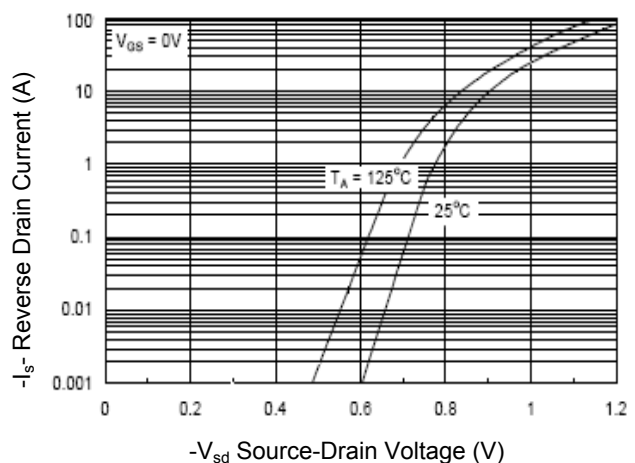
**Figure 9.  $R_{DS(ON)}$  vs  $V_{GS}$**



**Figure 10. Capacitance vs  $V_{DS}$**

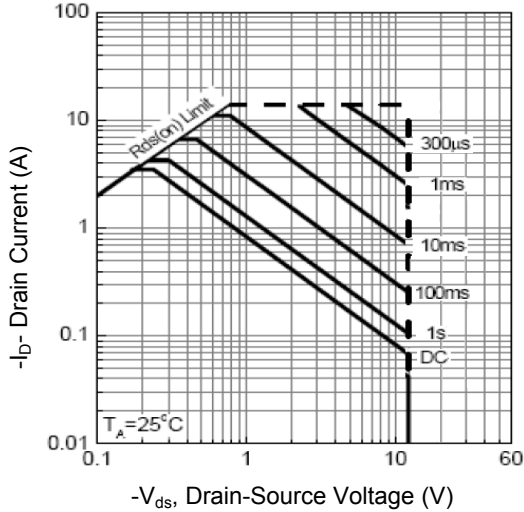


**Figure 11. Gate-Source Voltage vs Gate Charge**

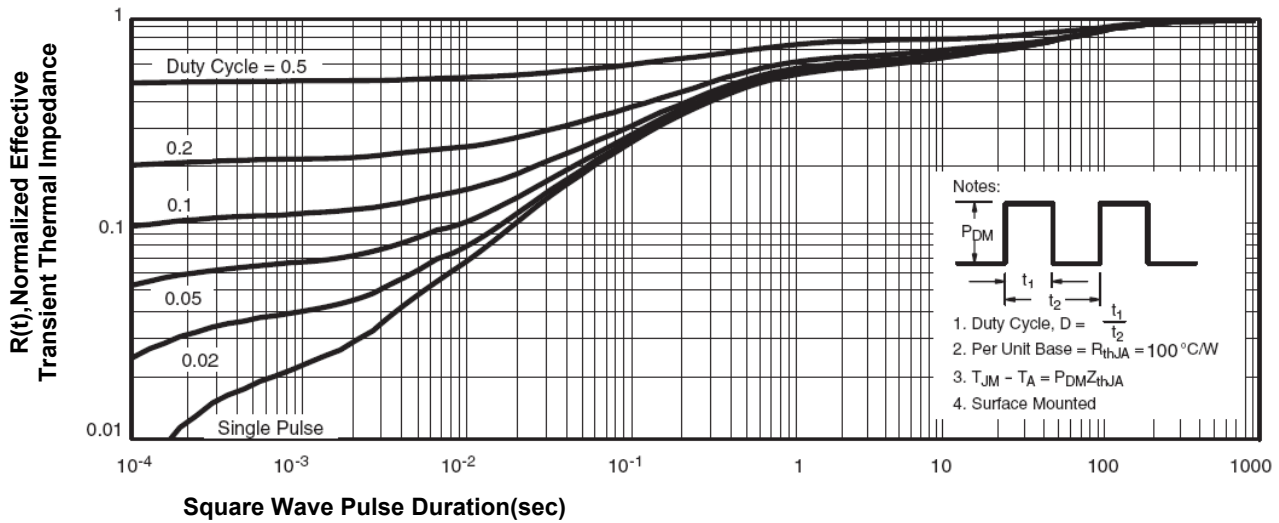


**Figure 12. Source- Drain Diode Forward**

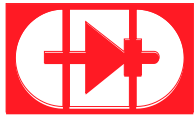
**Typical Electrical and Thermal Characteristic Curves**



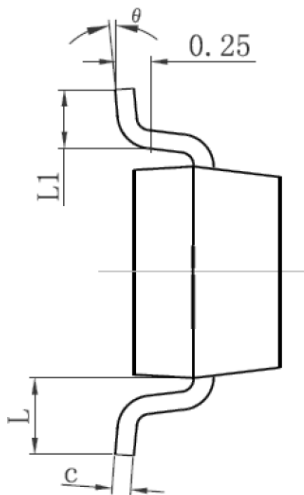
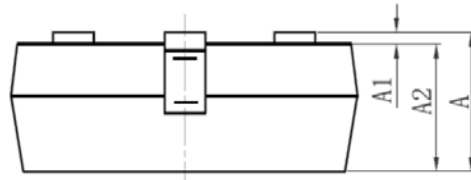
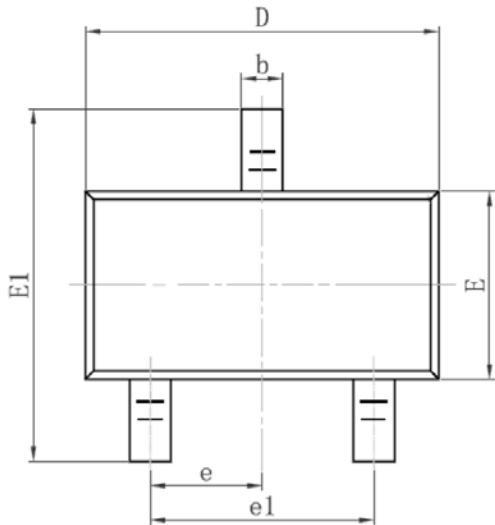
**Figure 13. Safe Operation Area**



**Figure 14. Normalized Maximum Transient Thermal Impedance**



Package Outline Dimensions (SOT-23)





Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

NOTES

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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