

DESCRIPTION

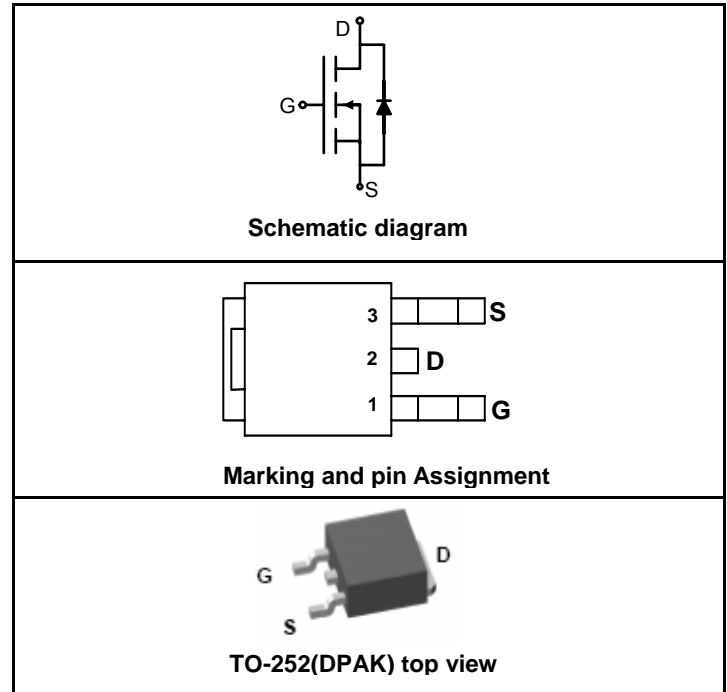
The SSF3055 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a Battery protection or in other Switching application.

GENERAL FEATURES

- $V_{DS} = 25V, I_D = 12A$
 $R_{DS(ON)} < 120m\Omega @ V_{GS}=5V$
 $R_{DS(ON)} < 90m\Omega @ V_{GS}=10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

Application

- Battery protection
- Load switch
- Power management



PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
3055	SSF3055	To-252(DPAK)	-	-	-

ABSOLUTE MAXIMUM RATINGS(TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	25	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	12	A
	I_{DM}	45	A
Maximum Power Dissipation	P_D	48	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	75	°C/W
--	-----------------	----	------

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	25			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			25	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 250	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	1.2	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=5V, I_D=12A$		70	120	$m\Omega$
		$V_{GS}=10V, I_D=12A$		50	90	$m\Omega$

Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=12A$	16	S
DYNAMIC CHARACTERISTICS (Note4)				
Input Capacitance	C_{ISS}	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$	450	PF
Output Capacitance	C_{OSS}		200	PF
Reverse Transfer Capacitance	C_{RSS}		60	PF
SWITCHING CHARACTERISTICS (Note 4)				
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=15V, I_D=12A$ $V_{GS}=10V, R_{GEN}=2.5\Omega$ $R_L=1\Omega$	6	nS
Turn-on Rise Time	t_r		6	nS
Turn-Off Delay Time	$t_{d(off)}$		20	nS
Turn-Off Fall Time	t_f		5	nS
Total Gate Charge	Q_g	$V_{DS}=12.5V, I_D=6A, V_{GS}=10V$	15	nC
Gate-Source Charge	Q_{gs}		2.0	nC
Gate-Drain Charge	Q_{gd}		7.0	nC
DRAIN-SOURCE DIODE CHARACTERISTICS				
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=12A$	1.5	V
Diode Forward Current (Note 2)	I_S		12	A
Reverse Recovery Time	t_{rr}	$I_F = I_S, dI_F/dt = 100A / \mu S$	30	nS
Reverse Recovery Charge	Q_{rr}		43	nC

NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on 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 CHARACTERISTICS

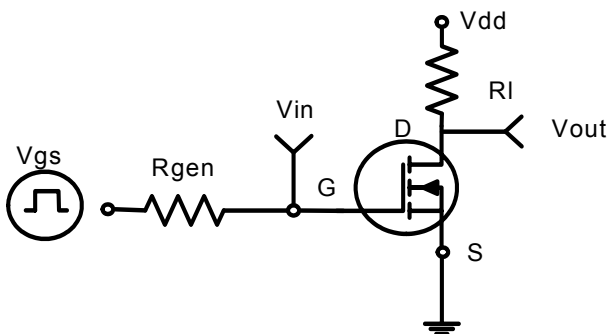


Figure 1: Switching Test Circuit

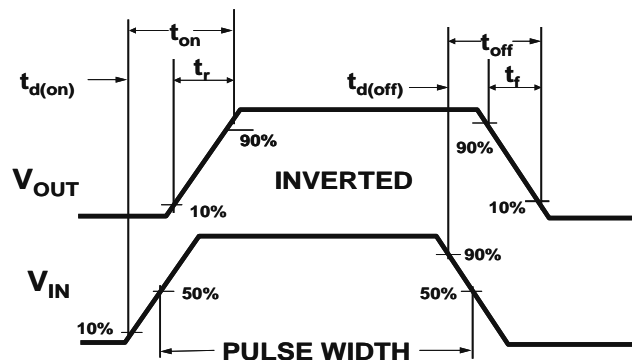
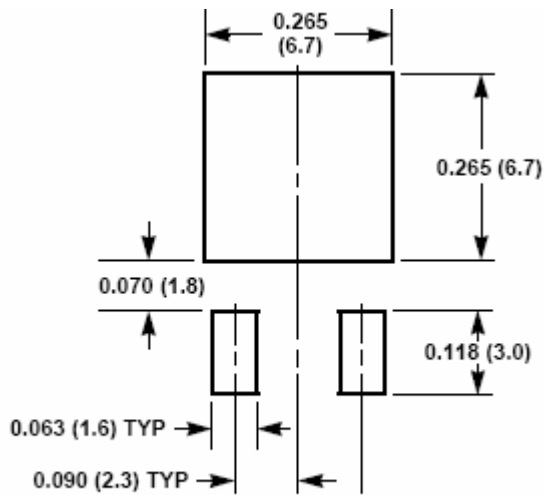
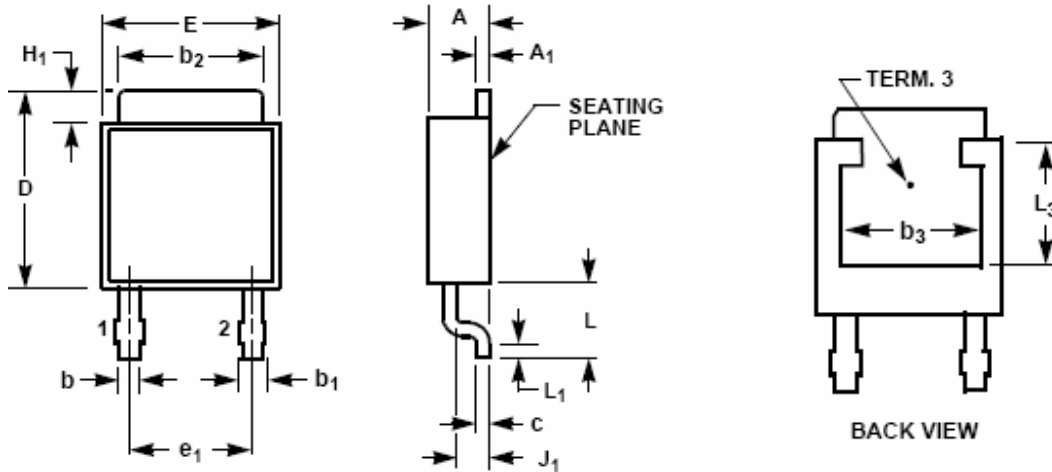


Figure 2: Switching Waveforms

TO-252 PACKAGE INFORMATION



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.086	0.094	2.19	2.38	-
A ₁	0.018	0.022	0.46	0.55	3, 4
b	0.028	0.032	0.72	0.81	3, 4
b ₁	0.033	0.040	0.84	1.01	3
b ₂	0.205	0.215	5.21	5.46	3, 4
b ₃	0.190	-	4.83	-	2
c	0.018	0.022	0.46	0.55	3, 4
D	0.270	0.290	6.86	7.36	-
E	0.250	0.265	6.35	6.73	-
e ₁	0.180 BSC		4.57 BSC		6
H ₁	0.035	0.045	0.89	1.14	-
J ₁	0.040	0.045	1.02	1.14	-
L	0.100	0.115	2.54	2.92	-
L ₁	0.020	-	0.51	-	3, 5
L ₃	0.170	-	4.32	-	2

NOTES:

1. No current JEDEC outline for this package.
2. L₃ and b₃ dimensions establish a minimum mounting surface for terminal 3.
3. Dimension (without solder).
4. Add typically 0.002 inches (0.05mm) for solder plating.
5. L₁ is the terminal length for soldering.
6. Position of lead to be measured 0.090 inches (2.28mm) from bottom of dimension D.
7. Controlling dimension: Inch.