



SSF3428

30V N-Channel MOSFET

DESCRIPTION

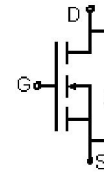
The SSF3428 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

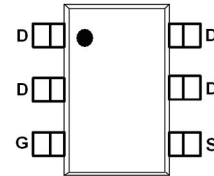
- $V_{DS} = 30V, I_D = 6A$
- $R_{DS(ON)} < 51m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} < 34m\Omega @ V_{GS}=10V$
- High Power and current handling capability
- Lead free product
- Surface Mount Package

APPLICATIONS

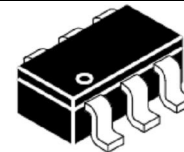
- PWM applications
- Load switch
- Power management



Schematic Diagram



Marking and Pin Assignment



TSOP-6 Top View

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape Width	Quantity
SSF3428	SSF3428	TSOP-6	-	-	-

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	$I_D (25^{\circ}C)$	6	A
	$I_D (70^{\circ}C)$	4.8	A
	I_{DM}	30	A
Maximum Power Dissipation	P_D	2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	62.5	$^{\circ}C/W$
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30V N-Channel MOSFET

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA

Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
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ON CHARACTERISTICS (Note 3)

Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1		3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=4.9A$		40	51	m Ω
		$V_{GS}=10V, I_D=6A$		28	34	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=6A$		12		S

DYNAMIC CHARACTERISTICS (Note4)

Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$		250		PF
Output Capacitance	C_{oss}			50		PF
Reverse Transfer Capacitance	C_{rss}			30		PF

SWITCHING CHARACTERISTICS (Note 4)

Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=15V, V_{GS}=10V, R_{GEN}=6\Omega$ $I_D=1A$		10		nS
Turn-on Rise Time	t_r			15		nS
Turn-Off Delay Time	$t_{d(off)}$			25		nS
Turn-Off Fall Time	t_f			10		nS
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=6A, V_{GS}=10V$		9		nC
Gate-Source Charge	Q_{gs}			1.8		nC
Gate-Drain Charge	Q_{gd}			1.5		nC
Body Diode Reverse Recovery Time	T_{rr}	$I_F=1.7A, dI/dt=100A/\mu s$		20		nS
Body Diode Reverse Recovery Charge	Q_{rr}			12		nC

DRAIN-SOURCE DIODE CHARACTERISTICS

Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=1.7A$		0.8	1.2	V
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NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on 1in² 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

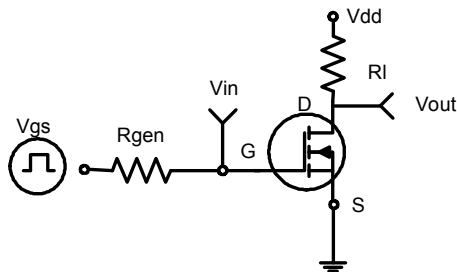


Figure 1: Switching Test Circuit

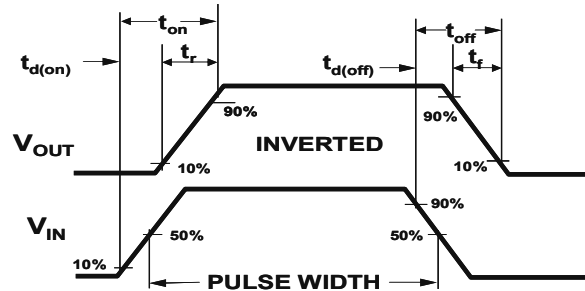


Figure 2: Switching Waveforms

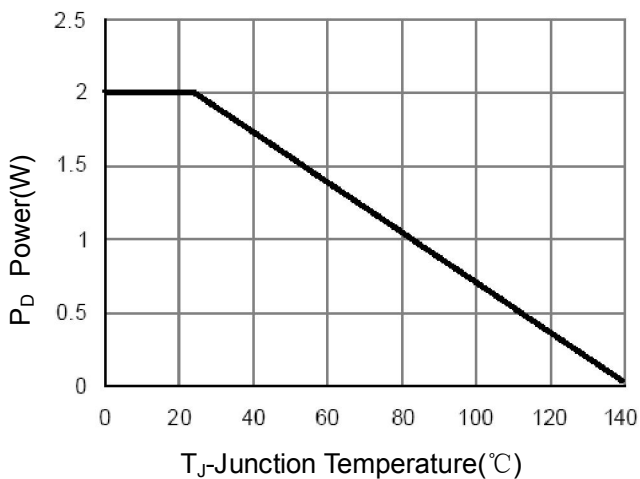


Figure 3 Power Dissipation

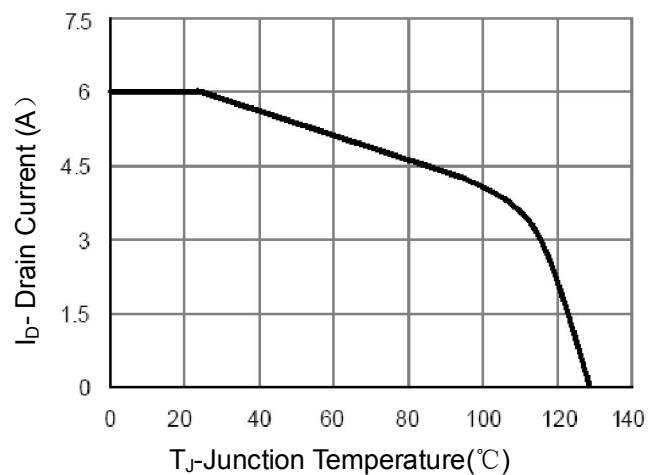


Figure 4 Drain Current

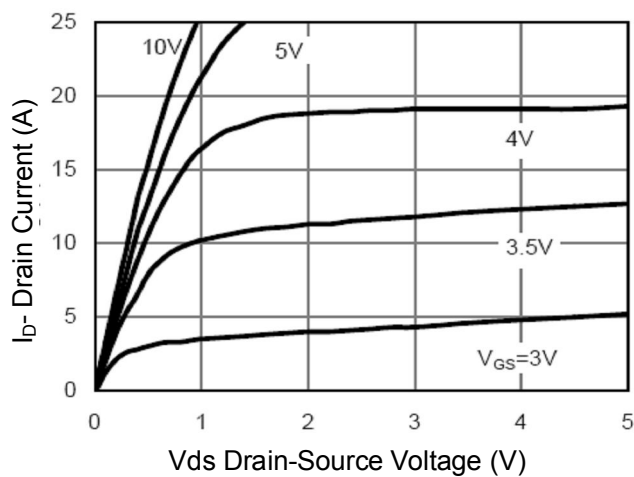


Figure 5 Output CHARACTERISTICS

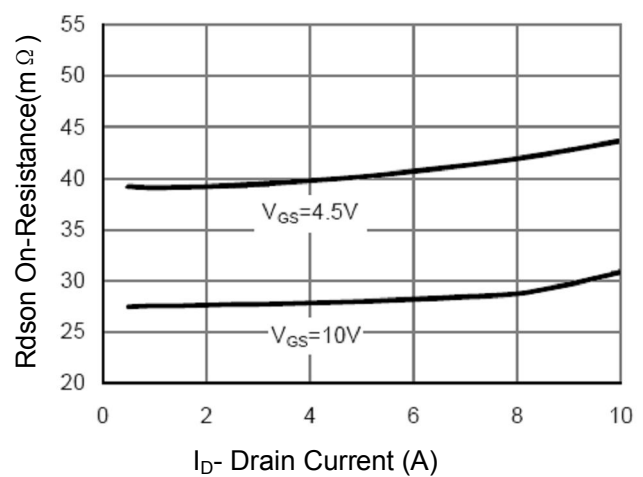


Figure 6 Drain-Source On-Resistance

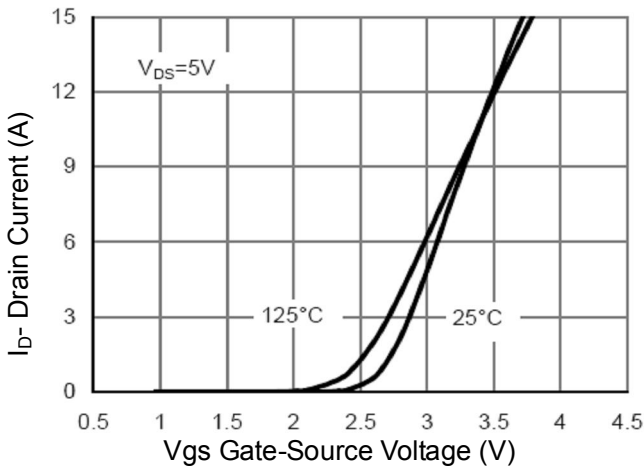


Figure 7 Transfer Characteristics

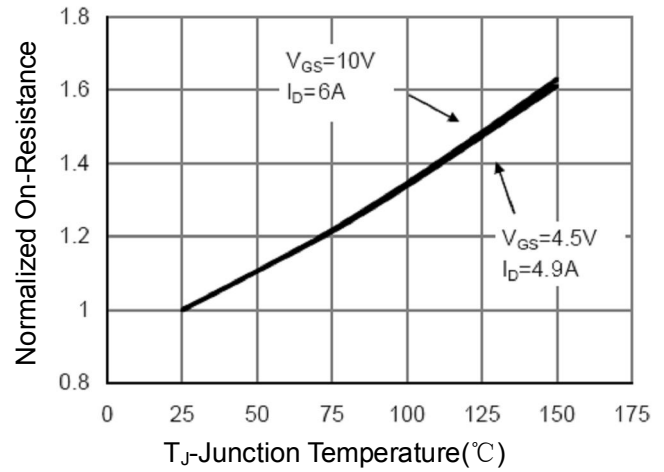


Figure 8 Drain-Source On-Resistance

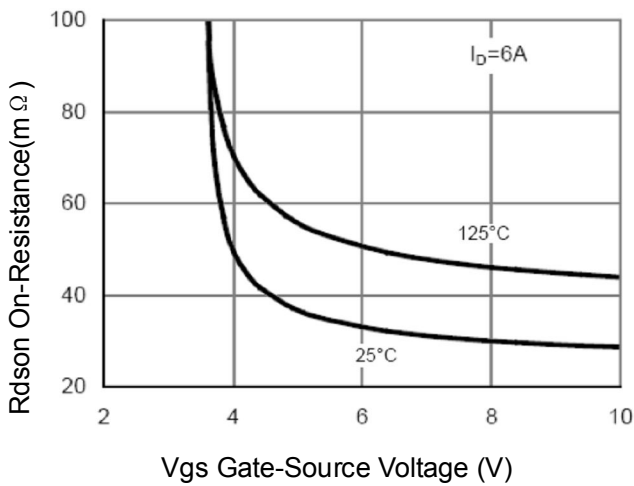


Figure 9 $R_{DS(on)}$ vs V_{GS}

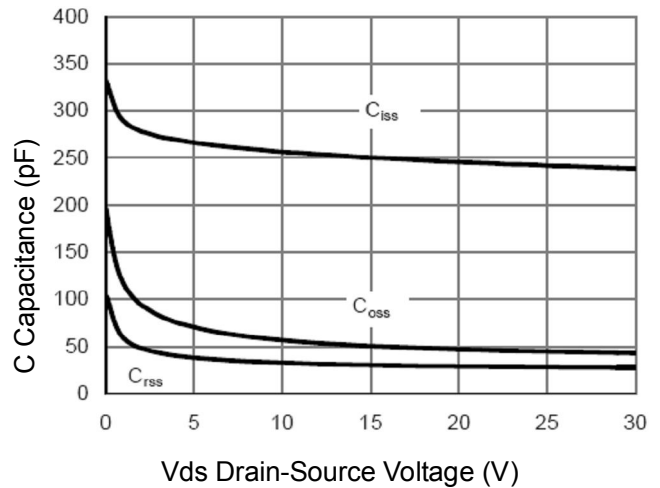


Figure 10 Capacitance vs V_{DS}

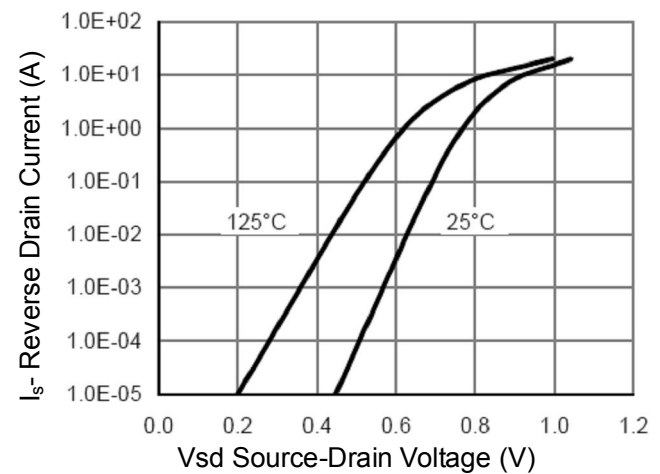
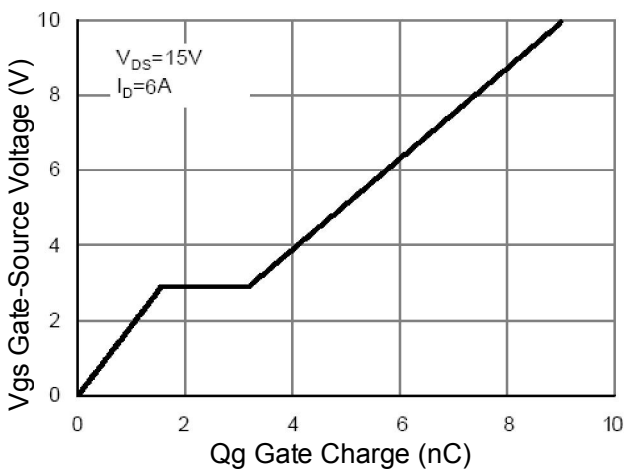


Figure 11 Gate Charge

Figure 12 Source- Drain Diode Forward

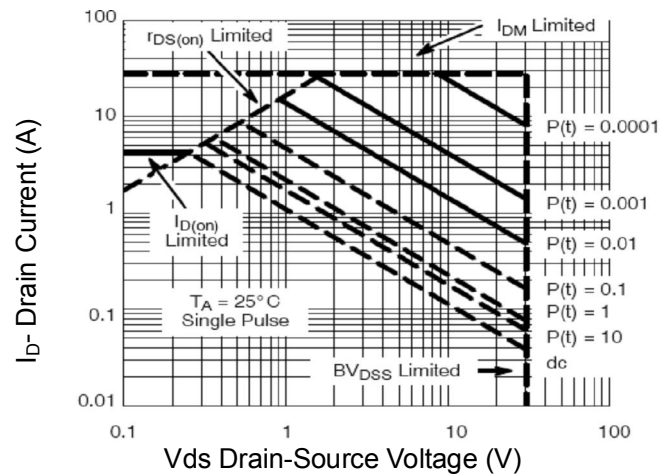


Figure 13 Safe Operation Area

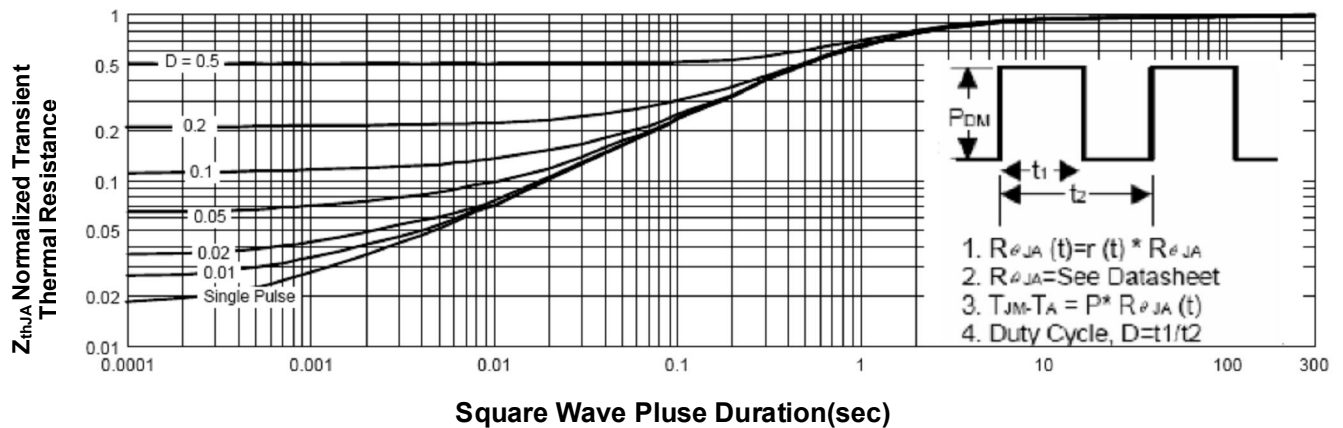
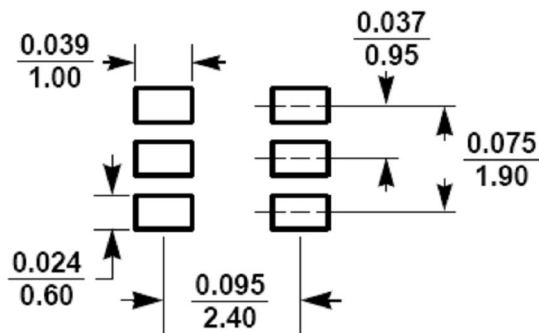
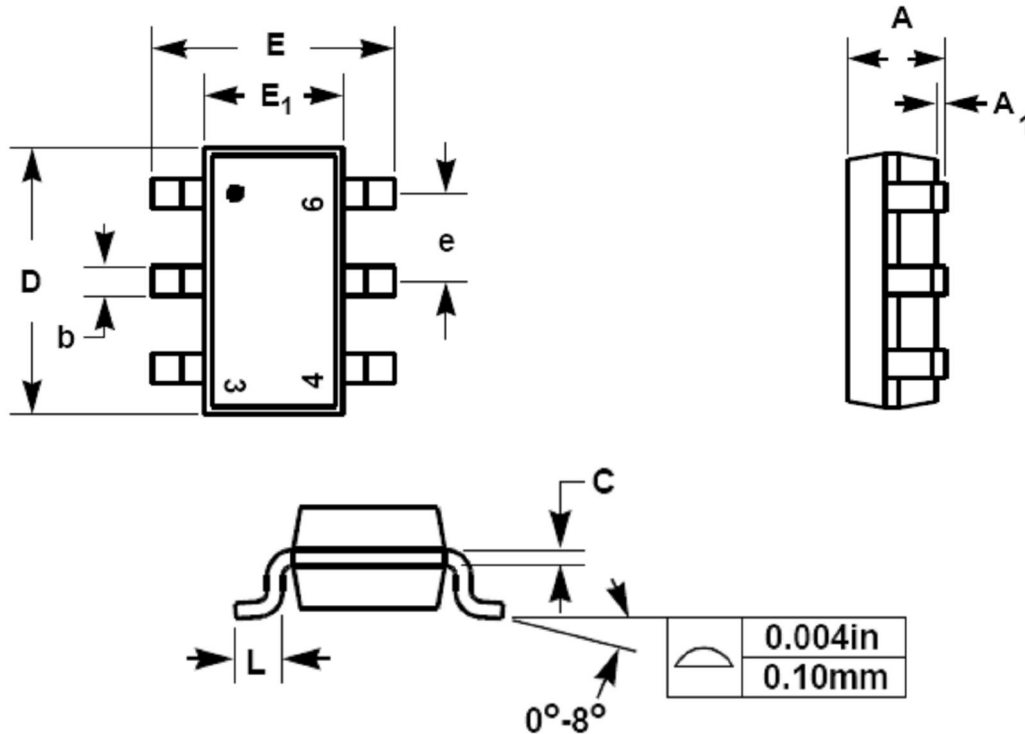


Figure 14 Normalized Maximum Transient Thermal Impedance

TSOP-6 PACKAGE INFORMATION



SYMBOL	Millimeters	
	MIN	MAX
A	0.90	1.10
A1	0.10	
b	0.30	0.50
c	0.08	0.20
D	2.70	3.10
E	2.60	3.00
E1	1.40	1.80
e	0.95 BSC	
L	0.35	0.55

NOTES:

1. Dimensions are inclusive of plating
2. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
3. Dimension L is measured in gauge plane.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.