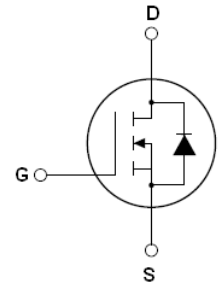


Features

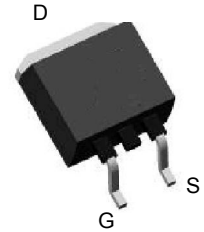
- Advanced trench processing technology
- Avalanche energy; 100% tested
- Fully characterized avalanche voltage and current

$I_D = 75A$
 $BV = 60V$
 $R_{ds(on)} = 8m\Omega$ (Typ.)



Description

The SSF6010A utilizes the latest processing techniques to achieve high cell density, low on-resistance and high repetitive avalanche rating. These features make this device extremely efficient and reliable for use in power switching applications and a wide variety of other applications.



TO-263 (D²PAK)

Applications

- Power switching applications

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
$I_D@T_c=25^\circ C$	Continuous Drain Current, $V_{GS}@10V$	75	A
$I_D@T_c=100^\circ C$	Continuous Drain Current, $V_{GS}@10V$	45	
I_{DM}	Pulsed Drain Current ①	300	
$P_D@T_c=25^\circ C$	Power Dissipation	144	W
	Linear Derating Factor	0.74	W/ °C
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy ②	220	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +175	°C

Thermal Resistance

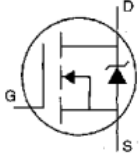
Symbol	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	1.04	—	°C/W
$R_{\theta JA}$	Junction-to-Ambient	—	—	62	

Electrical Characteristics ($T_J=25^\circ C$ unless otherwise specified)

Sym.	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	60	—	—	V	$V_{GS}=0V, I_D=250\mu A$
$R_{DS(on)}$	Static Drain-to-Source On-resistance	—	8	10	m Ω	$V_{GS}=10V, I_D=30A$
$V_{GS(th)}$	Gate Threshold Voltage	2.0	—	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
g_{fs}	Forward Transconductance	—	58	—	S	$V_{DS}=5V, I_D=30A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	2	μA	$V_{DS}=60V, V_{GS}=0V$
		—	—	10		$V_{DS}=60V, V_{GS}=0V,$ $T_J=150^\circ C$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS}=20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS}=-20V$

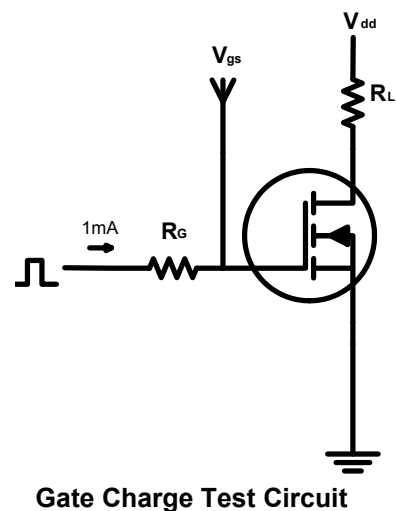
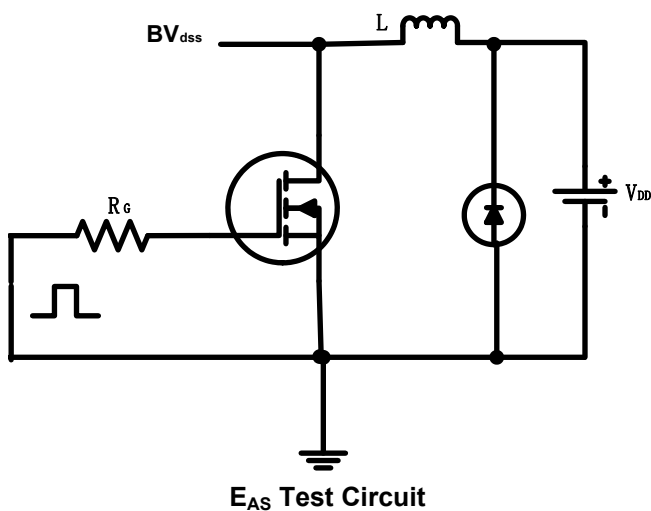
Q_g	Total Gate Charge	—	45	—	nC	$I_D=30A$ $V_{DD}=30V$ $V_{GS}=10V$
Q_{gs}	Gate-to-Source Charge	—	4.2	—		
Q_{gd}	Gate-to-Drain("Miller") Charge	—	15	—		
$t_{d(on)}$	Turn-on Delay Time	—	14.6	—	nS	$V_{DD}=30V$ $I_D=2A, R_L=15\Omega$ $R_G=2.5\Omega$ $V_{GS}=10V$
t_r	Rise Time	—	14.2	—		
$t_{d(off)}$	Turn-off Delay Time	—	40	—		
t_f	Fall Time	—	7.3	—		
C_{iss}	Input Capacitance	—	1480	—	pF	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0MHZ$
C_{oss}	Output Capacitance	—	190	—		
C_{rss}	Reverse Transfer Capacitance	—	135	—		

Source-Drain Ratings and Characteristics

Sym.	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	75	A	The MOSFET symbol shows the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	300		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	$T_J=25^\circ C, I_S=40A, V_{GS}=0V$ ③
t_{rr}	Reverse Recovery Time	—	33	—	nS	$T_J=25^\circ C, I_F=60A$ $di/dt=100A/\mu s$ ③
Q_{rr}	Reverse Recovery Charge	—	61	—	nC	
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible (Turn-on is dominated by $L_S + L_D$)				

Notes

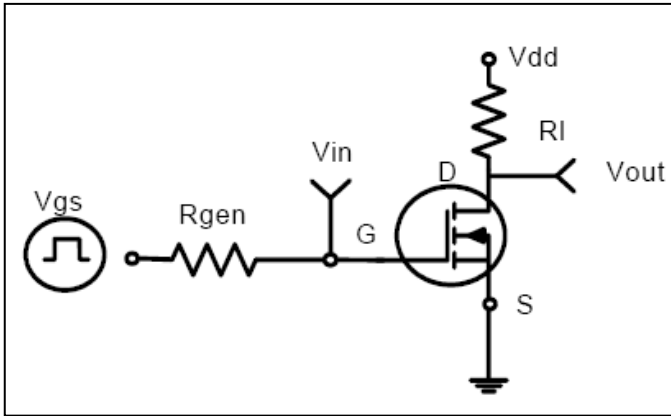
- ① Repetitive Rating; pulse width is limited by max junction temperature.
- ② Test Conditions: $L = 0.3mH, V_{DD} = 30V, I_d=37A$
- ③ Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1.5\%$; $R_G = 25\Omega$, Starting $T_J = 25^\circ C$



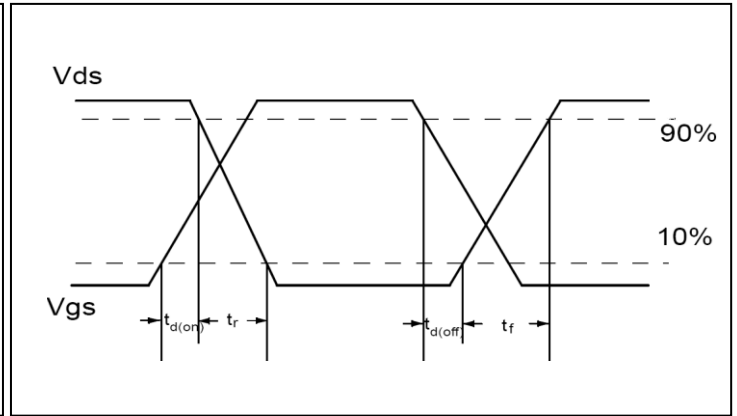


SSF6010A

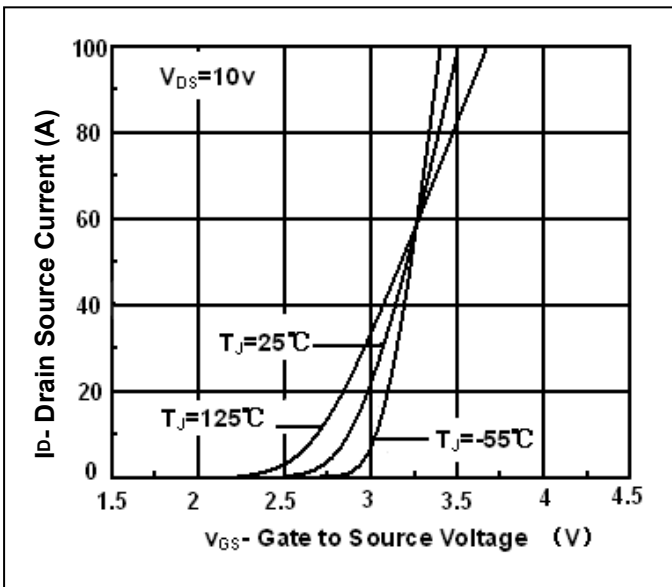
60V N-Channel MOSFET



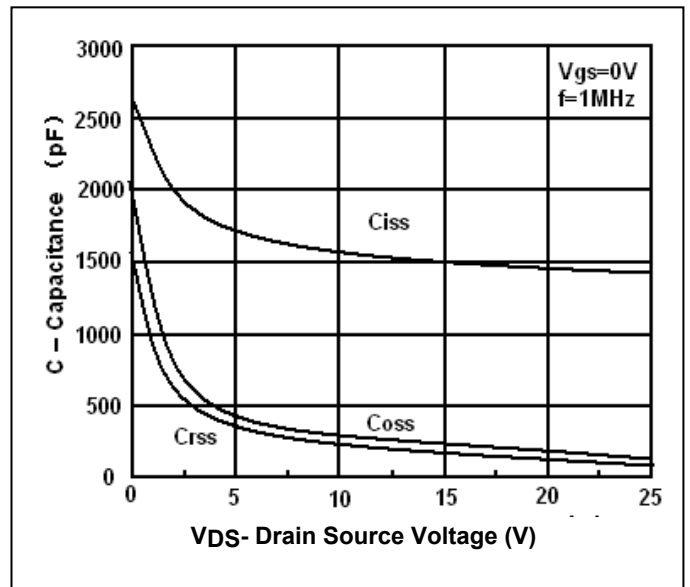
Switching Time Test Circuit



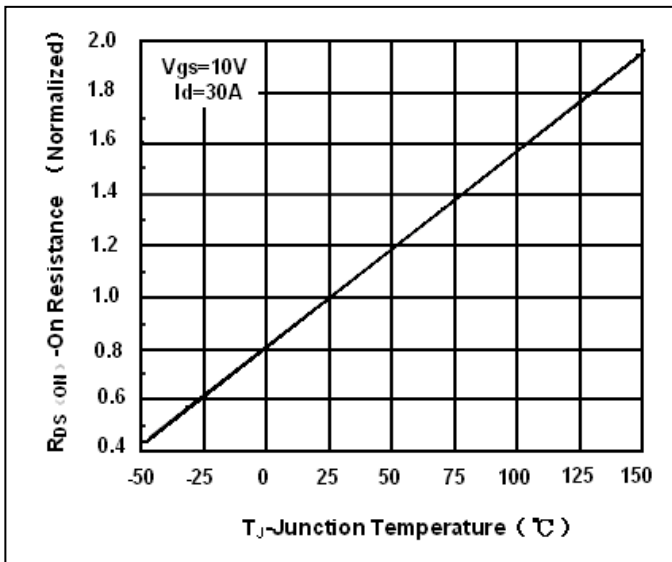
Switching Waveforms



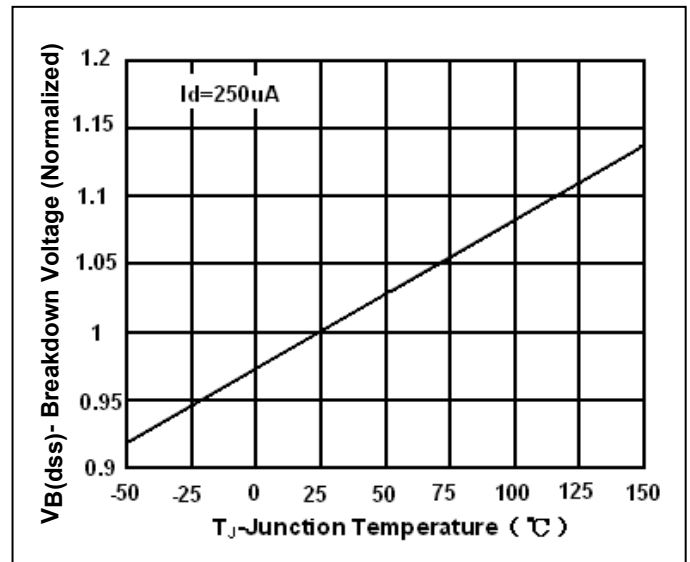
Transfer Characteristics



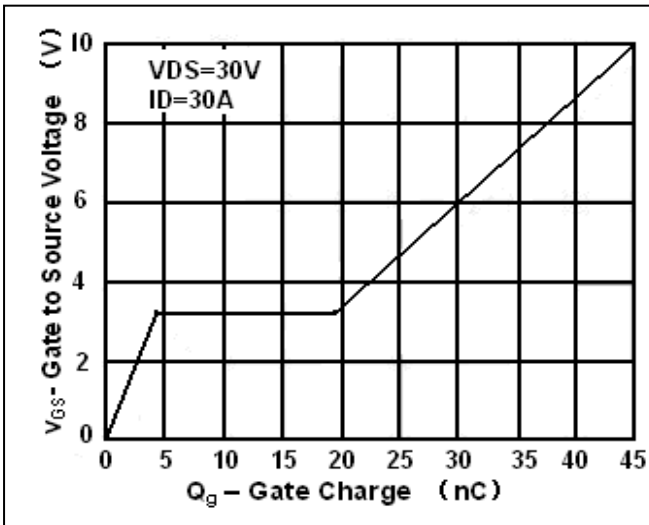
Capacitance vs Drain-to-Source Voltage



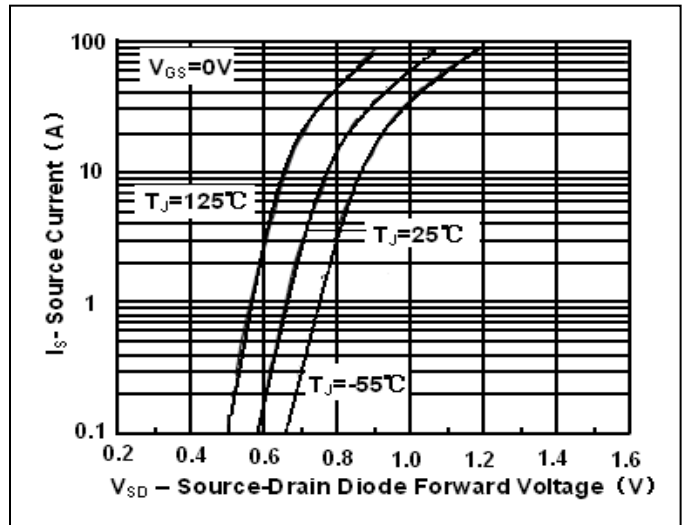
On Resistance vs. Junction Temperature



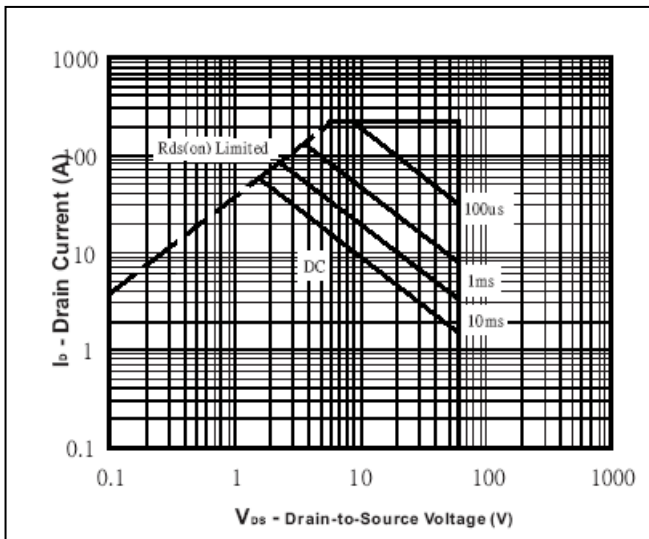
Breakdown Voltage vs. Junction Temperature



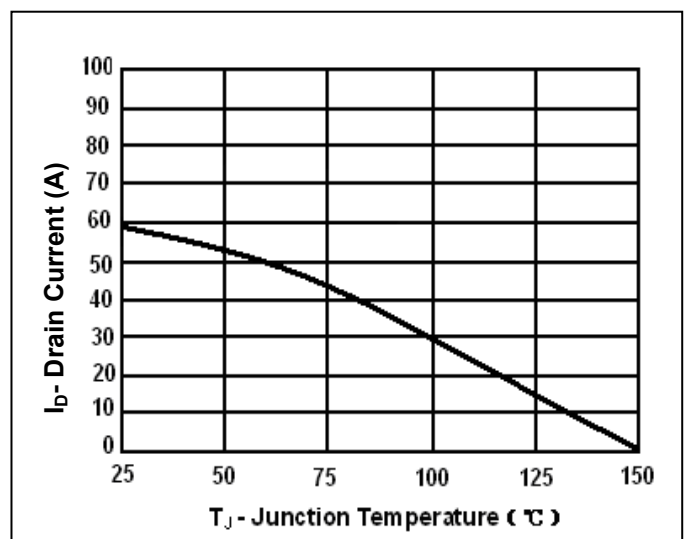
Gate-to-Source Voltage vs Gate Charge



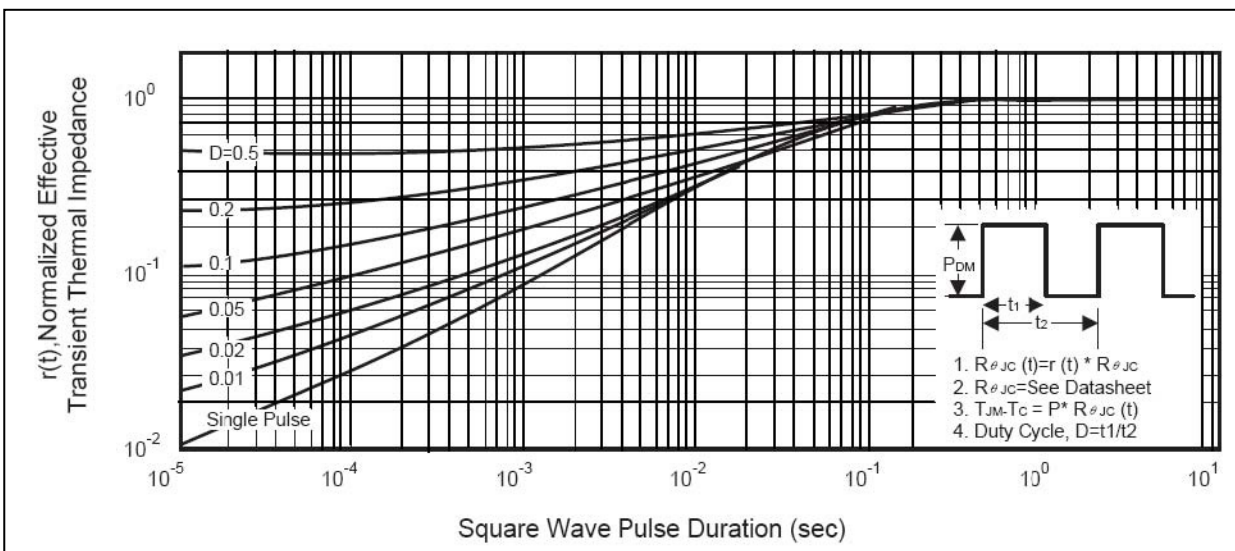
Source Current vs Source-Drain Diode Forward Voltage



Safe Operation Area



Max Drain Current vs. Junction Temperature



Transient Thermal Impedance Curve

Mechanical Data

TO-263/D²PAK

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.6	0.017		0.023
C2	1.23		1.36	0.048		0.053
D	8.95		9.35	0.352		0.368
D1		8			0.315	
E	10		10.4	0.393		
E1		8.5			0.334	
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.625
L2	1.27		1.4	0.050		0.055
L3	1.4		1.75	0.055		0.068
M	2.4		3.2	0.094		0.126
R		0.4			0.015	
V2	0°		4°			

