GOOD-ARK
SEMICONDUCTOR

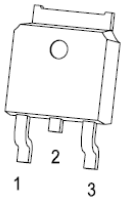
SSFU60N04

40V N-Channel MOSFET

Main Product Characteristics

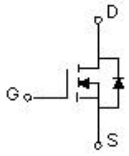
V_{DS}	40V
R_{DS}(on)	13mΩ@10V
I_D	60A

1.GATE
2. DRAIN
3. SOUR



TO-252 (DPAK)

Marking



Schematic Diagram

Features and Benefits

- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized Avalanche voltage and current
- Excellent stability and uniformity
- Excellent heat dissipation capability

Description

SSFU60N04 utilize the latest 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.

Maximum Ratings (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	60	A
Pulsed Drain Current	I_{DM}	240	A
Single Pulsed Avalanche Energy	E_{AS}(1)	400	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 to +150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10s)	T_L	260	℃

(1).E_{AS} condition: V_{DD}=20V,L=0.5mH, R_G=25Ω, Starting T_J = 25°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

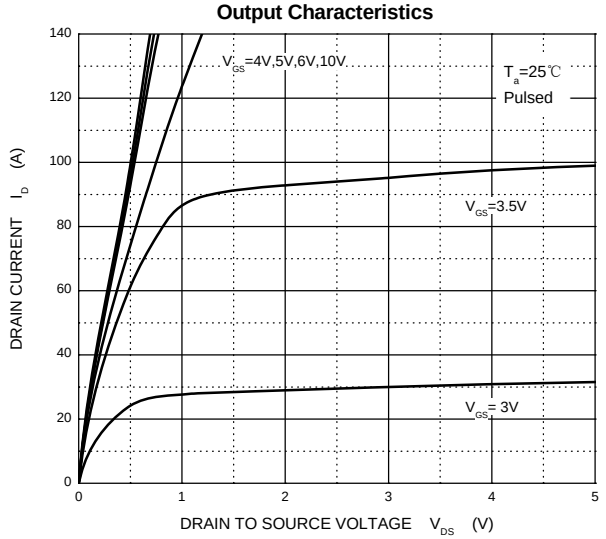
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =40V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.5	2.5	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		8	13	mΩ
		V_{GS} =4.5V, I_D =20A		10.5	20	mΩ
Forward transconductance	g_{FS}	V_{DS} =10V, I_D =20A	15			S
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	V_{DS} =20V,V_{GS} =0V, f =1MHz		1800		pF
Output capacitance	C_{oss}			280		
Reverse transfer capacitance	C_{rss}			190		
Switching characteristics (note 2)						
Total gate charge	Q_g	V_{DS}=20V, V_{GS}=10V, I_D=20A		29		nC
Gate-source charge	Q_{gs}			4.5		
Gate-drain charge	Q_{gd}			6.4		
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V,I_D=2A, V_{GS}=10V,R_G=3Ω, R_L=1Ω		6.4		ns
Turn-on rise time	t_r			17.2		
Turn-off delay time	$t_{d(off)}$			29.6		
Turn-off fall time	t_f			16.8		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V_{SD}	V_{GS} =0V, I_S=20A			1.2	V
Continuous drain-source diode forward current	I_S				60	A
Pulsed drain-source diode forward current	I_{SM}				240	A

Notes:

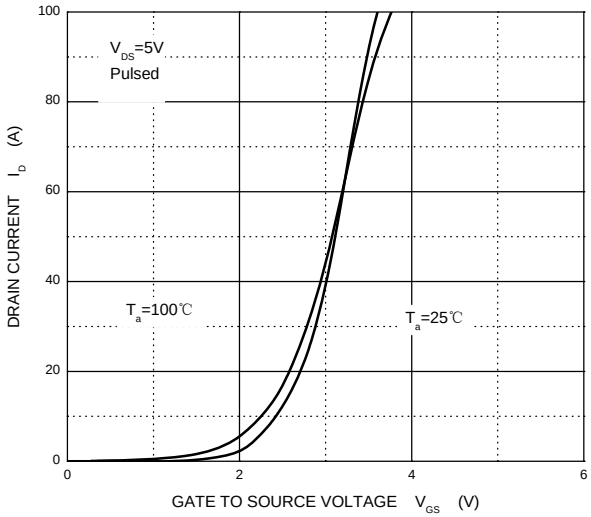
1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.
2. Guaranteed by design, not subject to production.

Typical Electrical and Thermal Characteristics

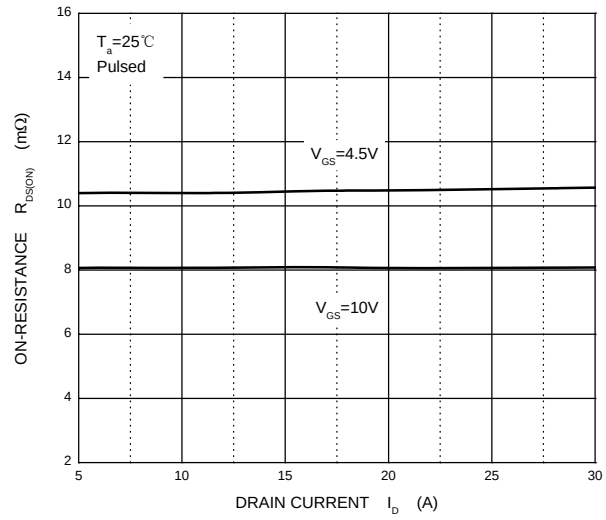
Output Characteristics



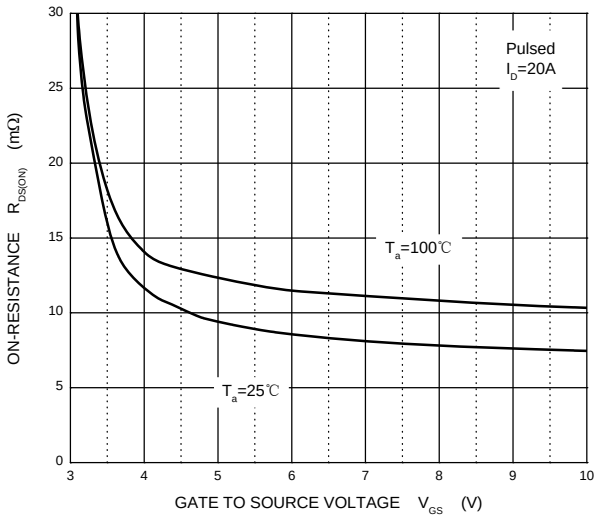
Transfer Characteristics



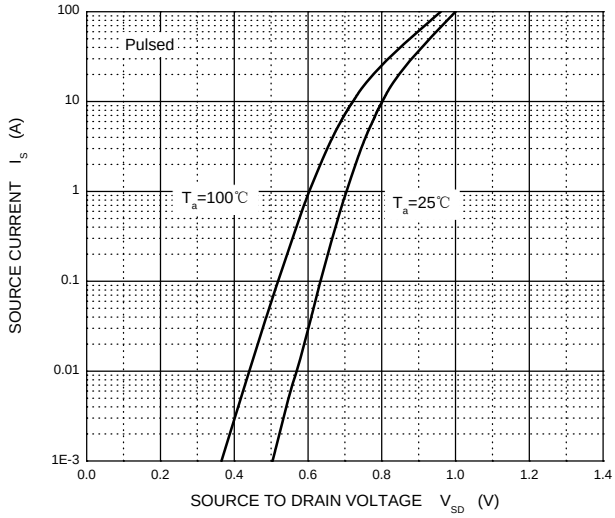
$R_{DS(ON)}$ —— I_D



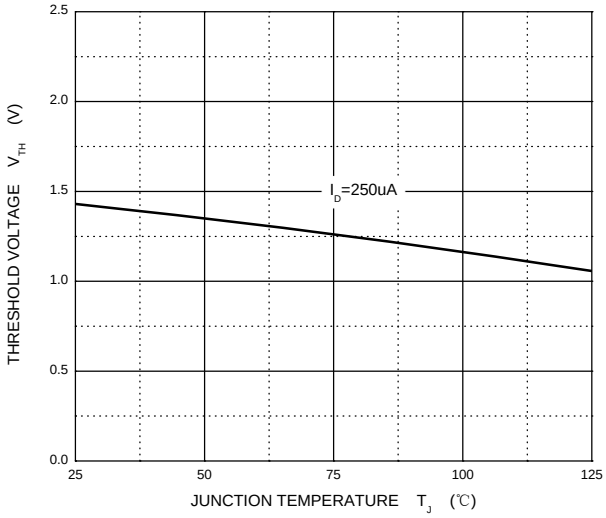
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}

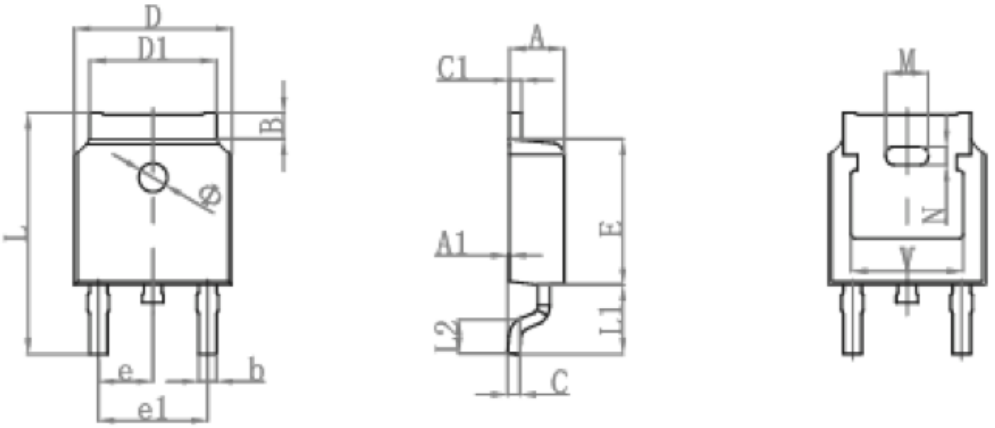


Threshold Voltage



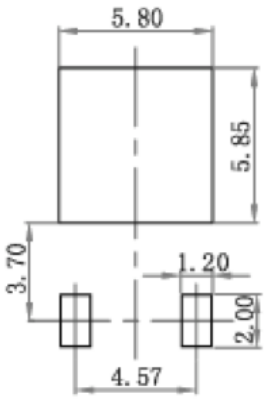
Package Outline Dimensions

TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286 TYP.		0.090 TYP.	
e1	4.327	4.727	0.170	0.186
M	1.778REF.		0.070REF.	
N	0.762REF.		0.018REF.	
L	9.800	10.400	0.386	0.409
L1	2.9REF.		0.114REF.	
L2	1.400	1.700	0.055	0.067
V	4.830 REF.		0.190 REF.	
Φ	1.100	1.300	0.043	0.051

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.