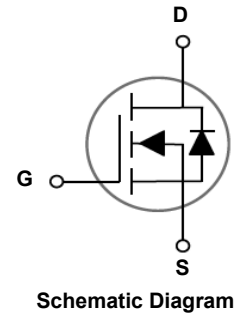
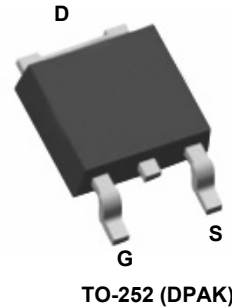


Main Product Characteristics

V_{DS}	200V
$R_{DS(ON)}$	300mΩ (Max.) @ $V_{GS}=10V$
I_D	8A



Features and Benefits

- Advanced MOSFET process technology
- Low on-resistance
- Fast switching and reverse body recovery



Description

The SSFD20N08 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	8	A
Drain Current-Continuous ($T_c=100^\circ C$)	$I_{D(100^\circ C)}$	5.6	A
Pulsed Drain Current ¹	I_{DM}	20	A
Maximum Power Dissipation	P_D	55	W
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ C$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ C$
Thermal Resistance, Junction-to-Case ²	$R_{\theta JC}$	2.3	$^\circ C/W$

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	200	215	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=200V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics ³						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4.5A$	-	260	300	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=4.5A$	3	-	-	S
Dynamic Characteristics ⁴						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $F=1.0MHz$	-	540	-	PF
Output Capacitance	C_{oss}		-	90	-	PF
Reverse Transfer Capacitance	C_{rss}		-	35	-	PF
Switching Characteristics ⁴						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=100V, I_D=4.5A,$ $V_{GS}=10V, R_{GEN}=5\Omega$	-	6.4	-	nS
Turn-on Rise Time	t_r		-	11	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	nS
Turn-Off Fall Time	t_f		-	12	-	nS
Total Gate Charge	Q_g	$V_{DS}=160V, I_D=4.5A,$ $V_{GS}=10V$	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	3.4	-	nC
Gate-Drain Charge	Q_{gd}		-	5.1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=8A$	-	-	1.2	V
Diode Forward Current ²	I_S		-	-	8	A

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. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

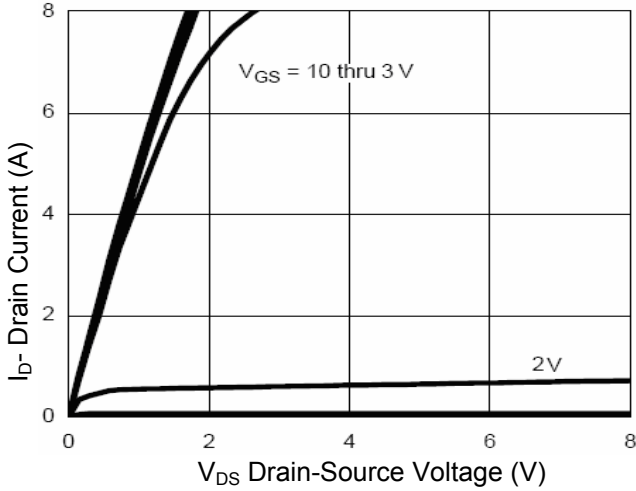


Fig.1 Output Characteristics

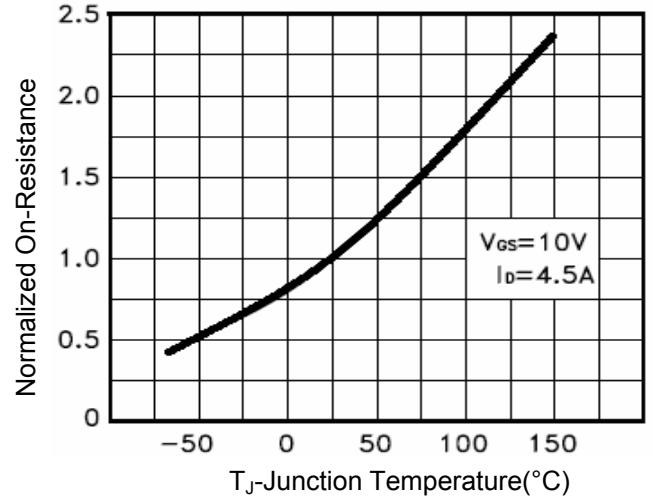


Fig.2 $R_{DS(ON)}$ -Junction Temperature

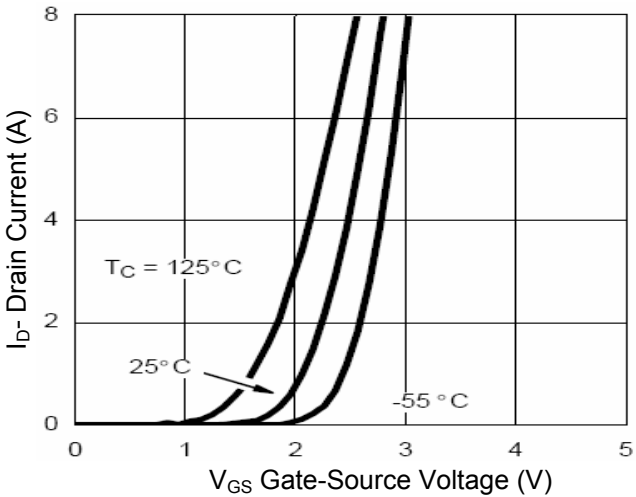


Fig.3 Transfer Characteristics

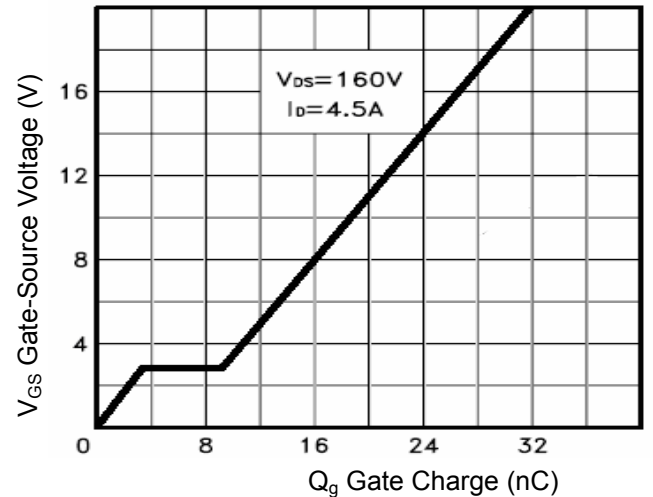


Fig.4 Gate Charge

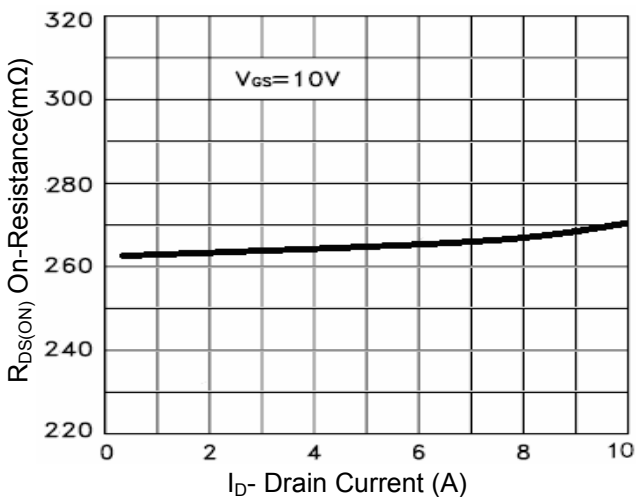


Fig.5 $R_{DS(ON)}$ - Drain Current

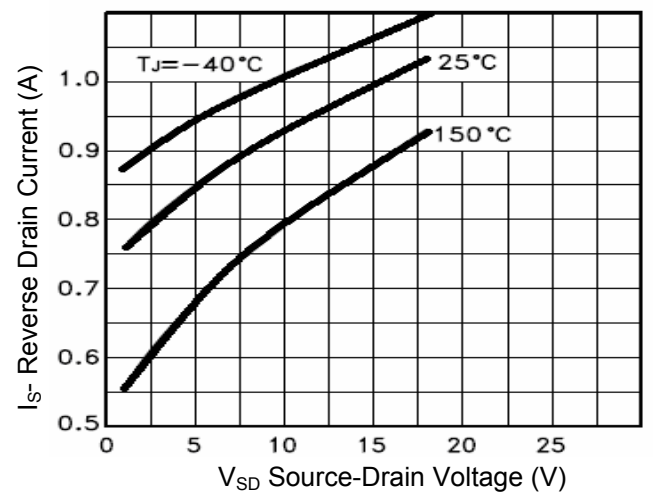


Fig.6 Source- Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

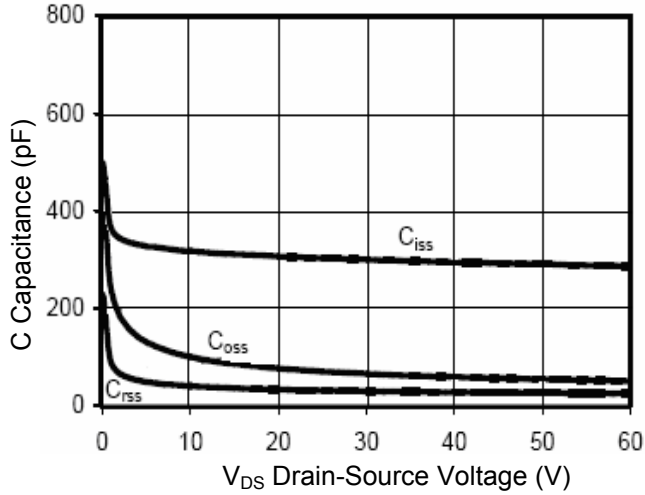


Fig.7 Capacitance vs V_{DS}

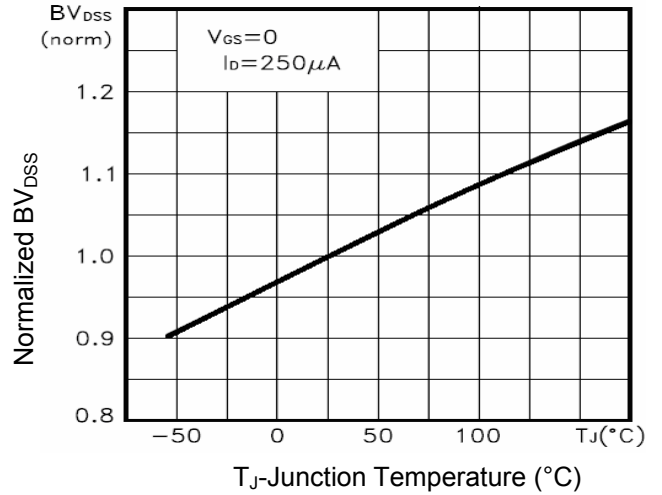


Fig.8 BV_{DSS} vs Junction Temperature

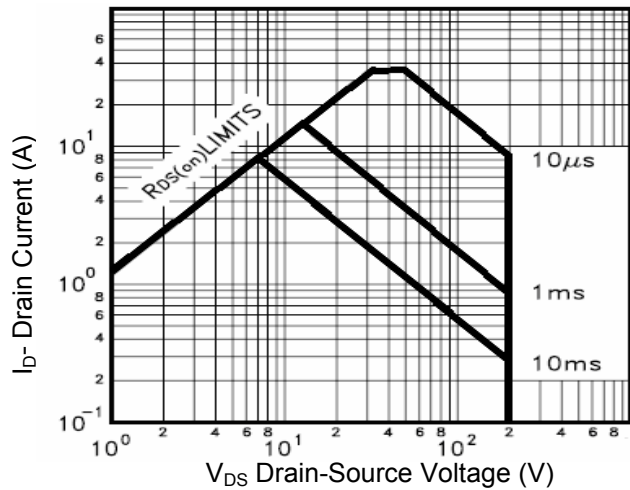


Fig.9 Safe Operation Area

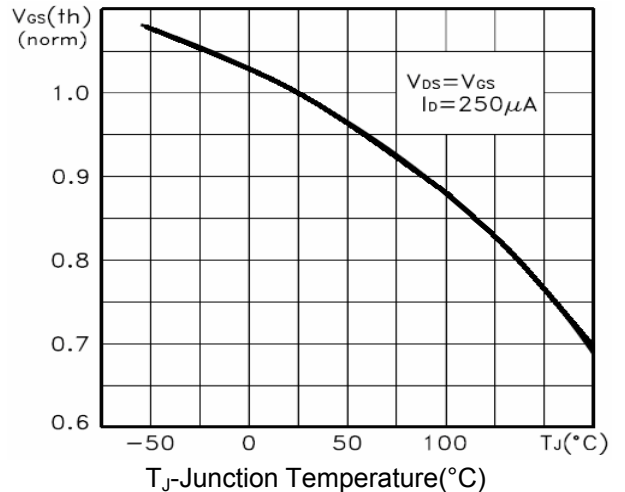


Fig.10 $V_{GS(th)}$ vs Junction Temperature

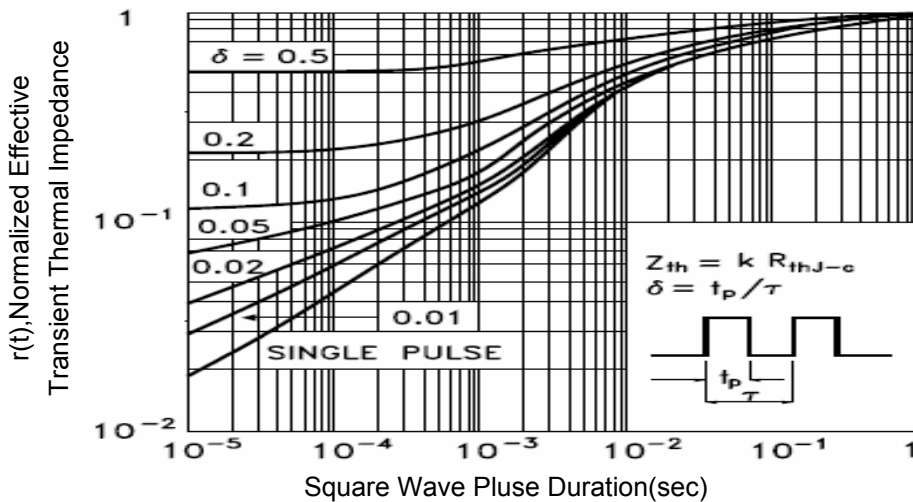


Fig.11 Normalized Maximum Transient Thermal Impedance

Test Circuits

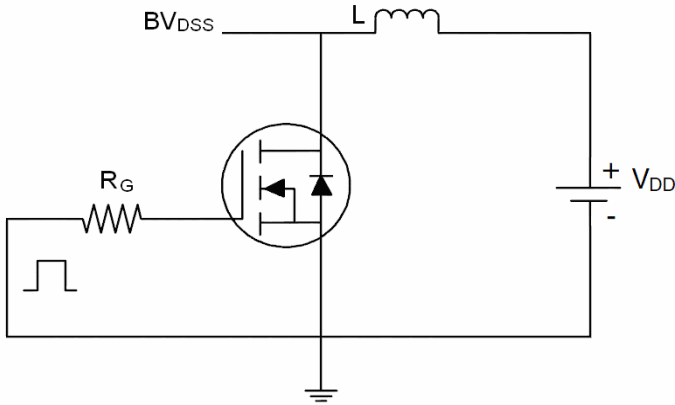


Fig.12 E_{AS} Test Circuit

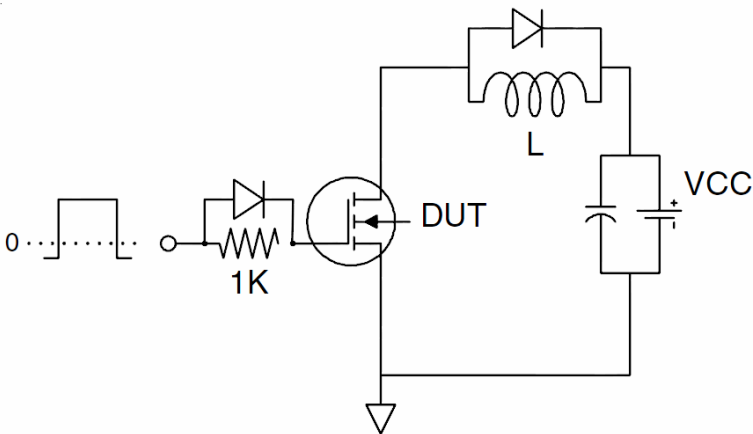


Fig.13 Gate Charge Test Circuit

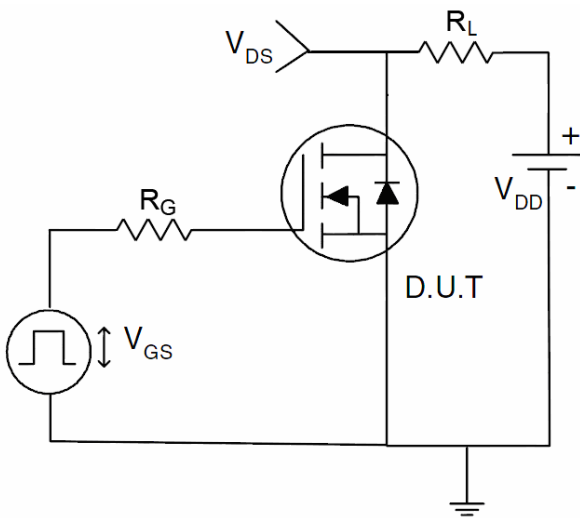
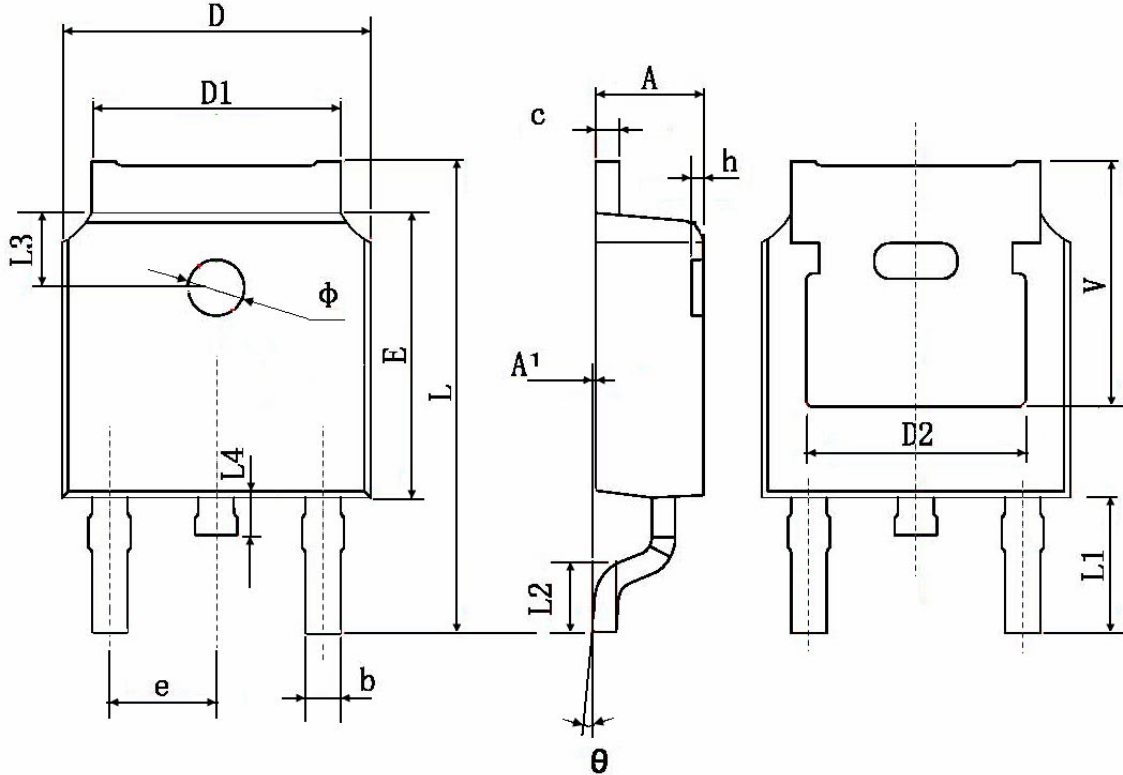


Fig.14 Switch Time Test Circuit

Package Outline Dimensions

TO-252(DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	