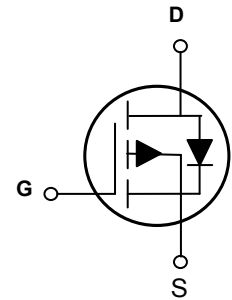


Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	25m Ω (Max.)
I_D	-60A



TO-252 (DPAK)



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSFD6025B 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 ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$), $V_{GS}=10\text{V}^1$	I_D	-60	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$), $V_{GS}=10\text{V}^1$		-50	A
Drain Current-Pulsed ²	I_{DM}	-240	A
Pulsed Source Current (Body Diode) ²	I_{SM}	-240	A
Maximum Power Dissipation ($T_C=25^{\circ}\text{C}$) ³	P_D	168	W
Single Pulse Avalanche Energy ($L=0.3\text{mH}$)	E_{AS}	300	mJ
Single Pulse Avalanche Current ($L=0.3\text{mH}$)	I_{AS}	44	A
Thermal Resistance, Junction-to-Ambient ($t \leq 10\text{s}$) ⁴	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.74	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	-	-	-1	μA
		$V_{DS}=-60V, V_{GS}=0V, T_J=125^\circ C$	-	-	-50	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.0	-	-3	V
Drain Static-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-23A$	-	12	25	m Ω
		$V_{GS}=-4.5V, I_D=-10A$	-	19	33	m Ω
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	$V_{DD}=-40V, I_D=-30A, V_{GS}=-10V$	-	112	-	nC
Gate-Source Charge	Q_{gs}		-	16.8	-	
Gate-Drain Charge	Q_{gd}		-	23.4	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-30V, R_G=3\Omega, R_L=1.5\Omega, V_{GS}=-10V, I_D=-20A$	-	8.0	-	nS
Rise Time	t_r		-	26.6	-	
Turn-Off Delay Time	$t_{d(off)}$		-	104.1	-	
Fall Time	t_f		-	140.5	-	
Input Capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V, F=1MHz$	-	4800	-	pF
Output Capacitance	C_{oss}		-	287	-	
Reverse Transfer Capacitance	C_{rss}		-	272	-	
Gate Resitance	R_g	$F=1MHz$	-	5.53	-	Ω
Source-Drain Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-60	-	A
Maximum Body-Diode Pulse Current	I_{SM}		-	-240	-	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-10A, T_J=25^\circ C$	-	-0.76	-1.2	V
Reverse Recovery Time	T_{rr}	$I_F=-20A, T_J=25^\circ C, di/dt=100A/\mu s$	-	22.1	-	nS
Reverse Recovery Charge	Q_{rr}		-	21.2	-	nC

Notes:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$

Typical Electrical and Thermal Characteristic Curves

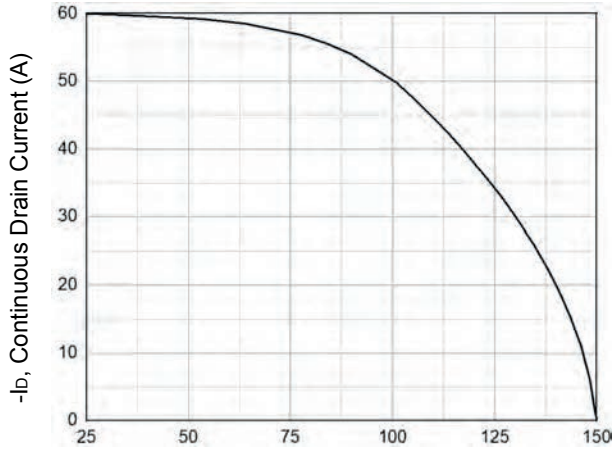


Figure 1. Continuous Drain Current vs. T_C

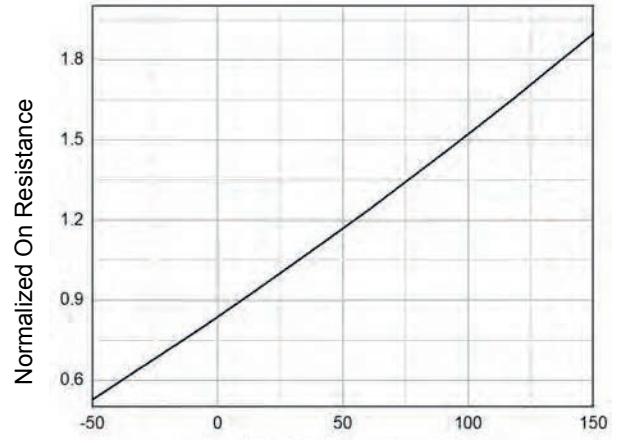


Figure 2. Normalized $R_{DS(on)}$ vs. T_J

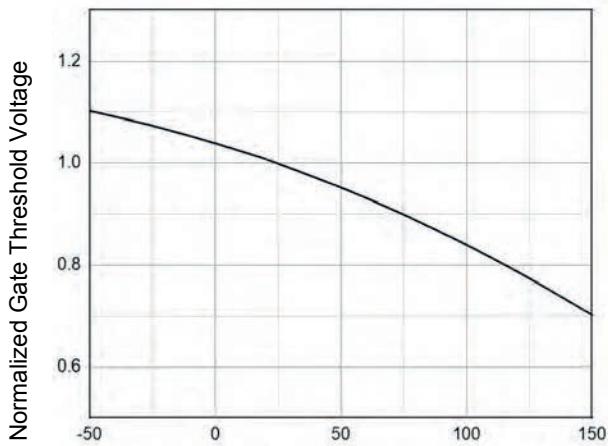


Figure 3. Normalized V_{th} vs. T_J

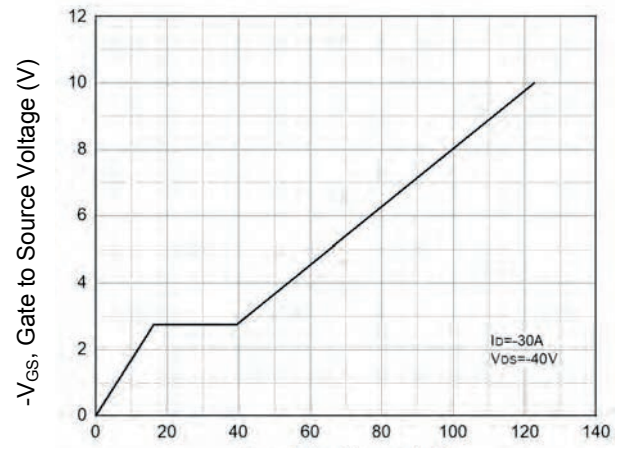


Figure 4. Gate Charge Waveform

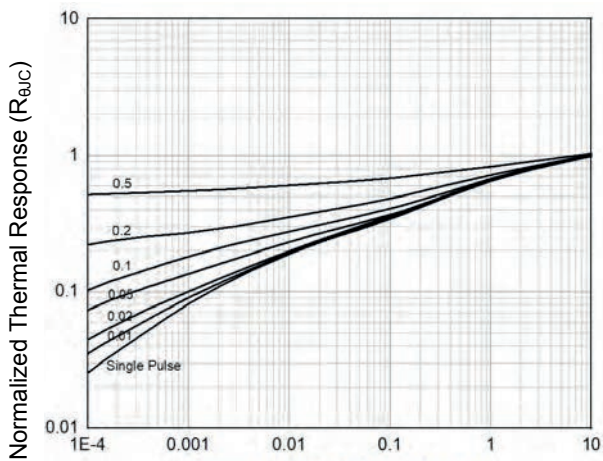


Figure 5. Normalized Transient Impedance

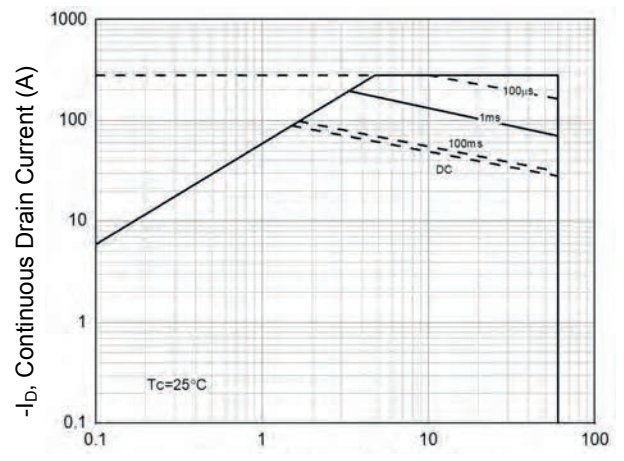
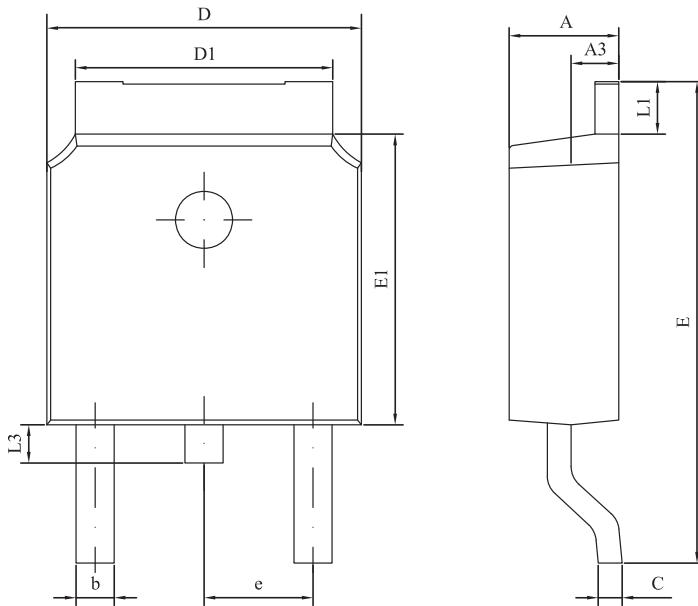


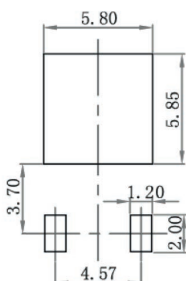
Figure 6. Maximum Safe Operation Area

Package Outline Dimensions TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.15	2.40	0.085	0.094
A3	0.90	1.10	0.035	0.043
b	0.50	0.90	0.020	0.035
C	0.40	0.65	0.016	0.026
D	6.30	6.90	0.248	0.272
D1	4.95	5.50	0.195	0.217
E	9.40	10.41	0.370	0.410
E1	5.90	6.30	0.232	0.248
e	2.286 BSC		0.090 BSC	
L1	0.89	1.27	0.035	0.050
L3	0.60	1.10	0.024	0.043

Recommended Pad Layout



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

Order Information

Device	Package	Marking	Carrier	Quantity
SSFD6025B	TO-252 (DPAK)	SSFD6025	Tape & Reel	2,500 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com