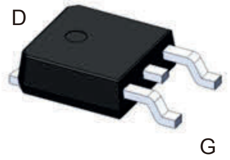
GOOD-ARK
SEMICONDUCTOR

SSFD6017

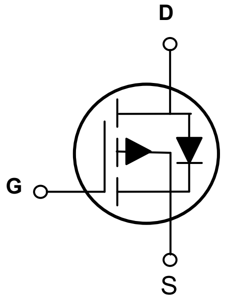
60V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	17mΩ (Max.)
I_D	-70A



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 SSFD6017 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°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°C), V_{GS}=10V[1]	I_D	-70	A
Drain Current-Continuous (T_C=100°C), V_{GS}=10V[1]		-55	A
Drain Current-Pulsed[2]	I_{DM}	-280	A
Pulsed Source Current (Body Diode)[2]	I_{SM}	-280	A
Maximum Power Dissipation (T_C=25°C)[3]	P_D	170	W
Single Pulse Avalanche Energy (L=0.3mH)	E_{AS}	300	mJ
Single Pulse Avalanche Current (L=0.3mH)	I_{AS}	44	A
Thermal Resistance, Junction-to-Ambient (t ≤ 10s)[4]	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.73	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250uA	-60	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=-60V, V_{GS}=0V	-	-	-1	μA
Drain-to-Source Leakage Current		V_{DS}=-60V, V_{GS}=0V, T_J=125°C	-	-	-50	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250uA	-1.0	-	-3	V
Drain Static-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-23A	-	12	17	mΩ
		V_{GS}=-4.5V, I_D=-10A	-	17	27	mΩ
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	V_{DD}=-40V, I_D=-30A, V_{GS}=-10V	-	110	150	nC
Gate-Source Charge	Q_{gs}		-	16.5	30	
Gate-Drain Charge	Q_{gd}		-	23.2	40	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-30V, R_G=3Ω, R_L=1.5Ω, V_{GS}=-10V, I_D=-20A	-	8.0	-	nS
Rise Time	t_r		-	26.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	105.2	-	
Fall Time	t_f		-	142.1	-	
Input Capacitance	C_{iss}	V_{DS}=-25V, V_{GS}=0V, F=1MHz	-	4802	-	pF
Output Capacitance	C_{oss}		-	288	-	
Reverse Transfer Capacitance	C_{rss}		-	273	-	
Gate Resistance	R_g	F=1MHz	-	5.56	-	Ω
Source-Drain Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-70	-	A
Maximum Body-Diode Pulse Current	I_{SM}		-	-280	-	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-10A, T_J=25°C	-	-0.74	-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-20A, di/dt=100A/μs, T_J=25°C	-	22.3	-	nS
Reverse Recovery Charge	Q_{rr}		-	21.5	-	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°C.

Typical Electrical and Thermal Characteristic Curves

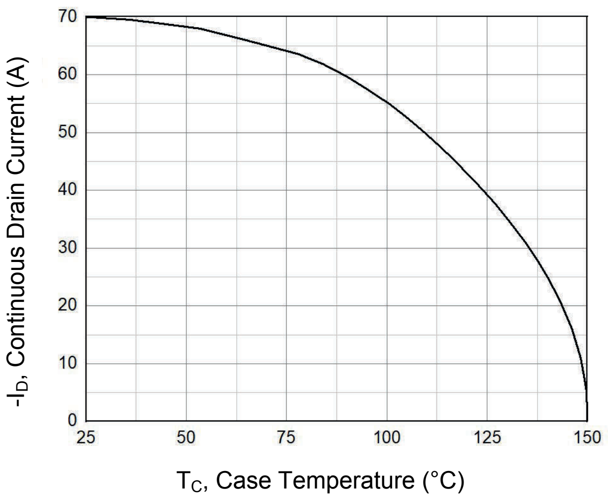


Figure 1. Continuous Drain Current vs. T_C

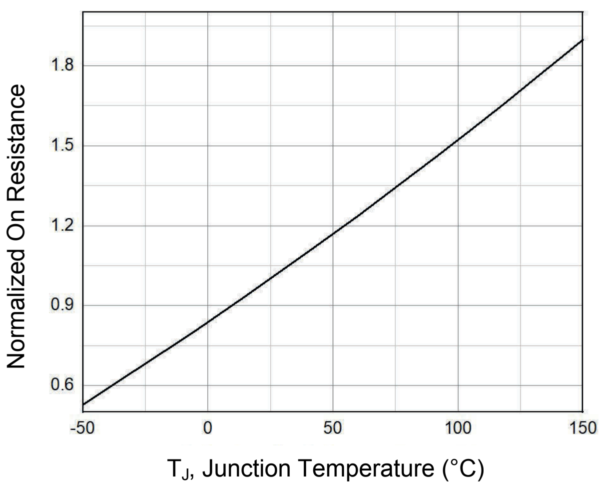


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

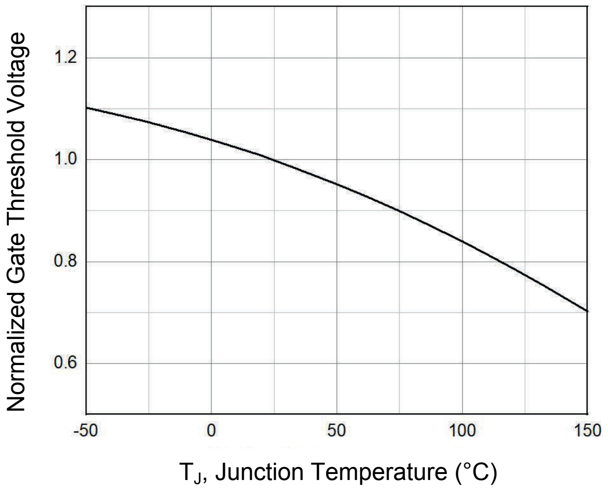


Figure 3. Normalized V_{th} vs. T_J

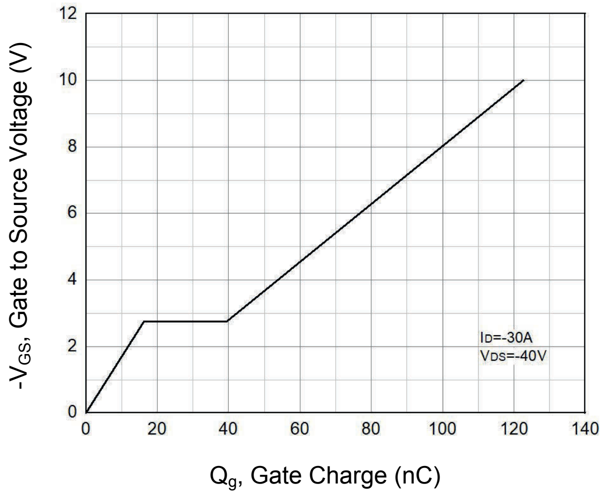


Figure 4. Gate Charge Waveform

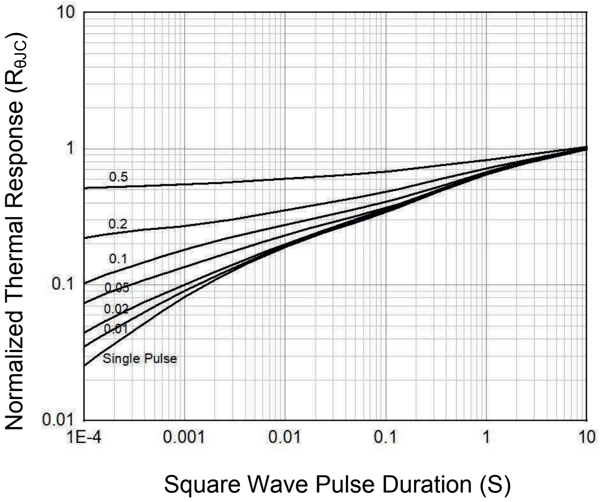


Figure 5. Normalized Transient Impedance

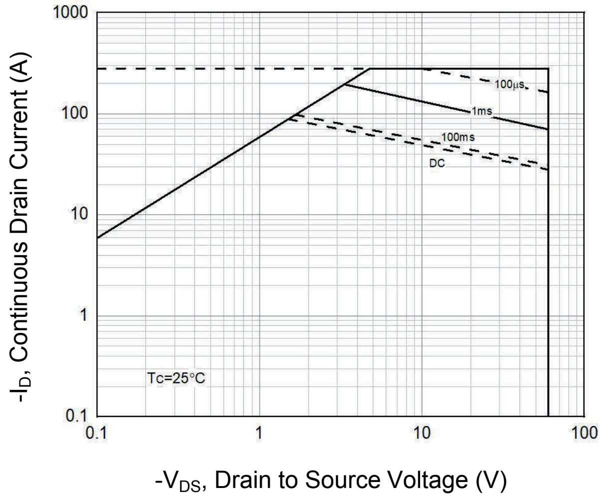
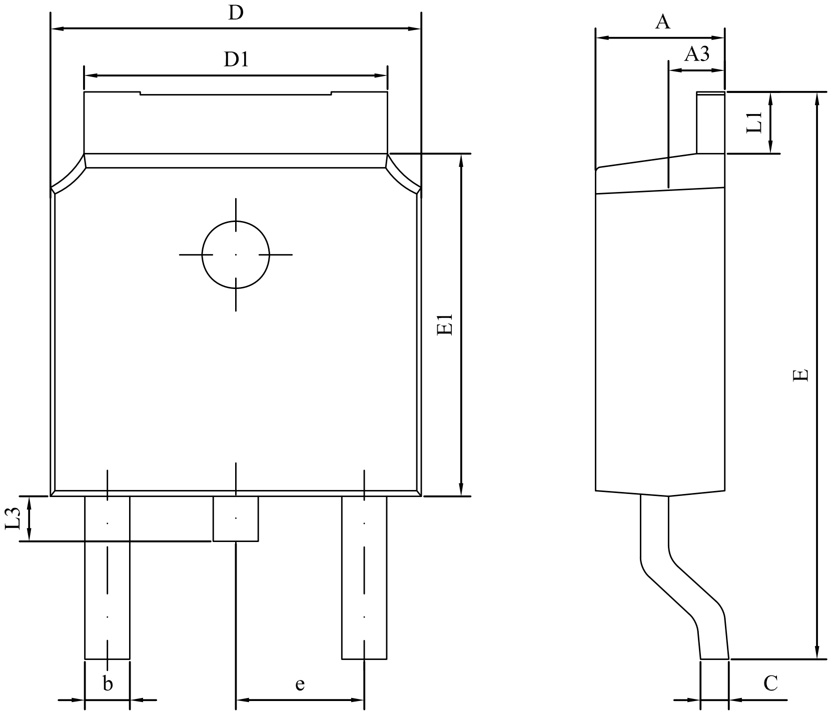


Figure 6. Maximum Safe Operation Area

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

Order Information

Device	Package	Marking	Carrier	Quantity
SSFD6017	TO-252 (DPAK)	D6017	Tape & Reel	2,500 Pcs / Reel

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