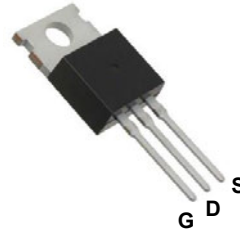
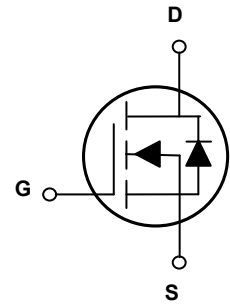


Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	3.4m Ω (Max)
I_D	150A



TO-220



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 GSFH03152 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 supplies 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}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous @ Steady-State (T _A =25°C) ¹	I _D	150	A
Drain Current-Continuous @ Steady-State (T _A =100°C)		100	
Drain Current-Pulsed ²	I _{DM}	400	A
Power Dissipation (T _A =25°C)	P _D	110	W
Linear Derating Factor (T _A =25°C)		0.73	
Single Pulse Avalanche Energy ³	E _{AS}	650	mJ
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	R _{θJA}	62.5	°C/W
Thermal Resistance, Junction-to-Case	R _{θJC}	1.36	°C/W
Operating Junction Temperature Range	T _J	-55 To +175	°C
Storage Temperature Range	T _{STG}	-55 To +175	°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}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^\circ C$	-	-	50	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	2.5	3.4	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	4.2	5.8	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.7	2.5	V
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=30A, V_{GS}=10V$	-	70.6	-	nC
Gate-Source Charge	Q_{gs}		-	12.2	-	
Gate-Drain ("Miller") Charge	Q_{gd}		-	16.5	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V, R_G=2\Omega, V_{GS}=4.5V, R_L=0.25\Omega, I_D=60A$	-	11	-	nS
Rise Time	t_r		-	80	-	
Turn-Off Delay Time	$t_{d(off)}$		-	26	-	
Fall Time	t_f		-	58	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, F=1MHz$	-	3400	-	pF
Output Capacitance	C_{oss}		-	357	-	
Reverse Transfer Capacitance	C_{rss}		-	306	-	
Gate Resistance	R_g	$F=1MHz$	-	1.9	3	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	150	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	400	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$	-	0.86	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=60A, T_J=25^\circ C, di/dt=100A/\mu s$	-	56	-	nS
Reverse Recovery Charge	Q_{rr}		-	110	-	nC

Note:

1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating: Pulsed width limited by maximum junction temperature.
3. $L=0.5mH, V_{DD}=10V, R_g=25\Omega$, starting $T_J=25^\circ C$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

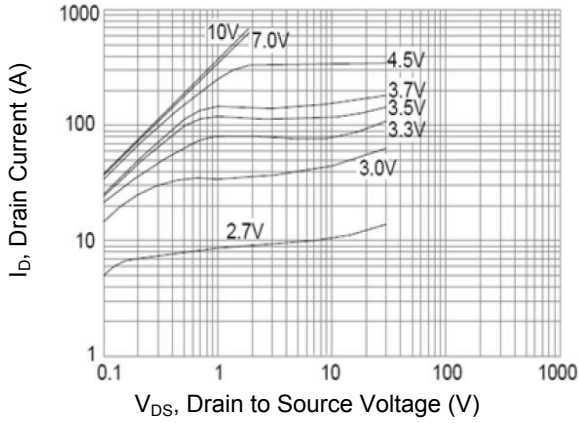


Figure 1. Output Characteristics

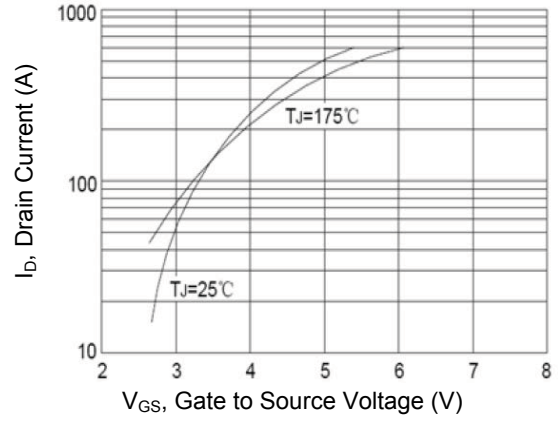


Figure 2. Transfer Characteristics

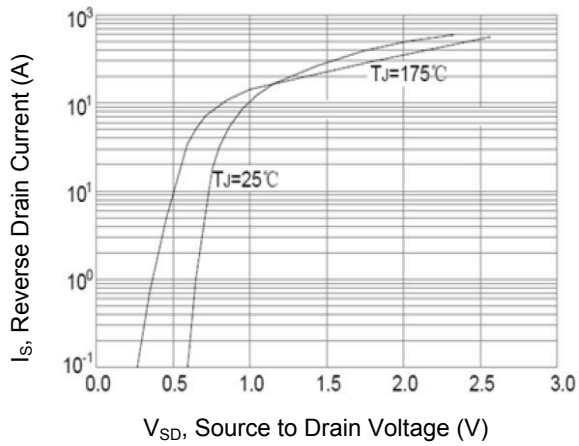


Figure 3. Body Diode Characteristics

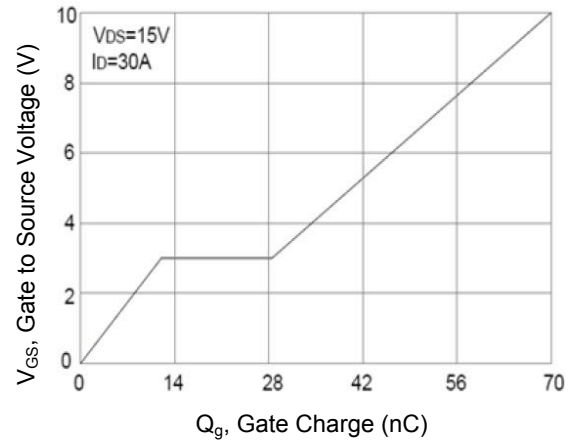


Figure 4. Gate Charge

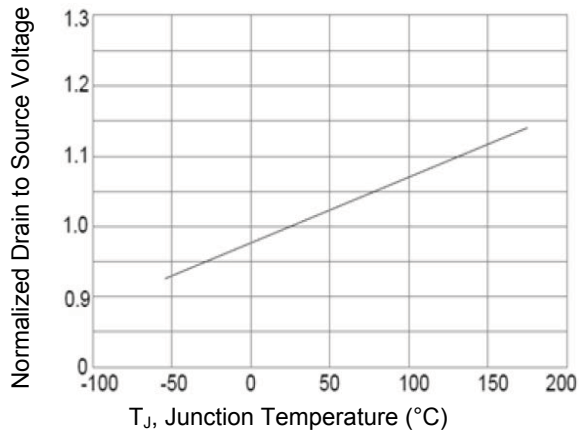


Figure 5. Normalized BV_{DSS} vs. Junction Temperature

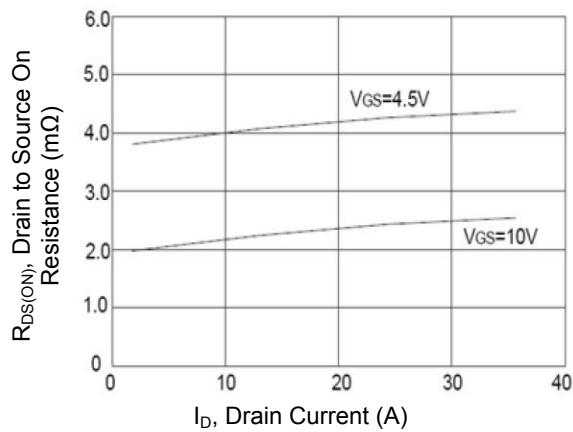


Figure 6. On-Resistance vs. Drain Current

Typical Electrical and Thermal Characteristic Curves

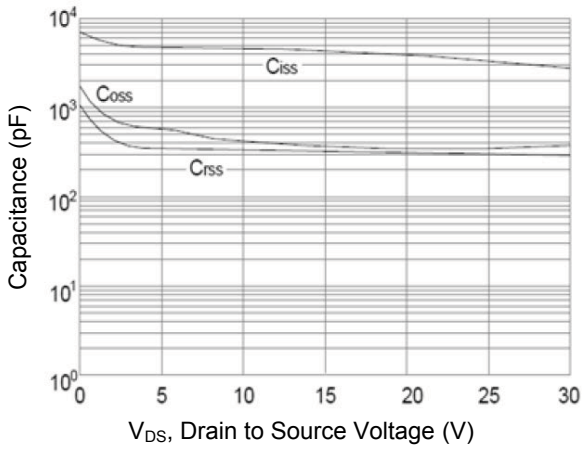


Figure 7. Capacitance Characteristics

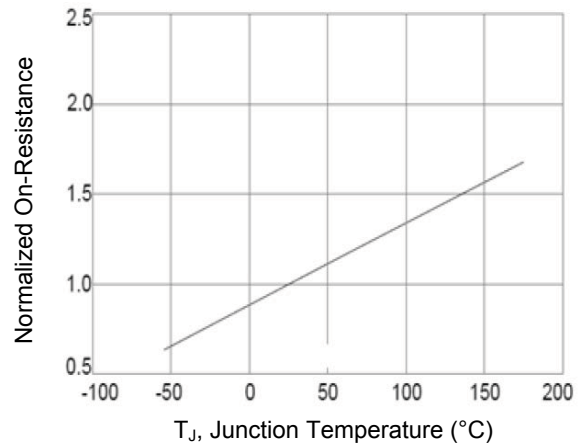


Figure 8. Normalized $R_{DS(on)}$ vs. T_J

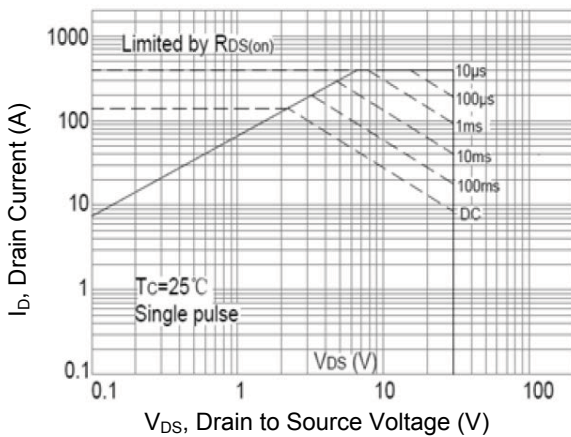


Figure 9. Safe Operation Area

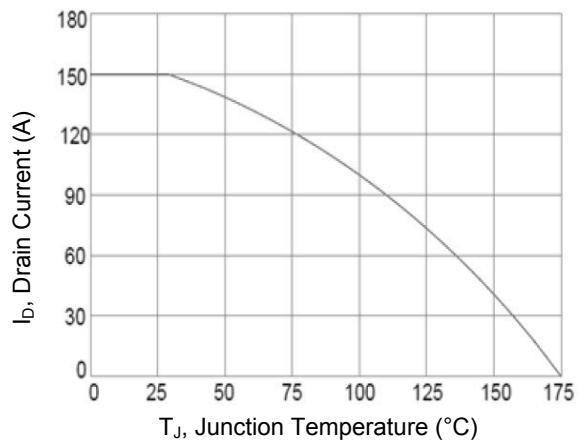


Figure 10. Current De-rating

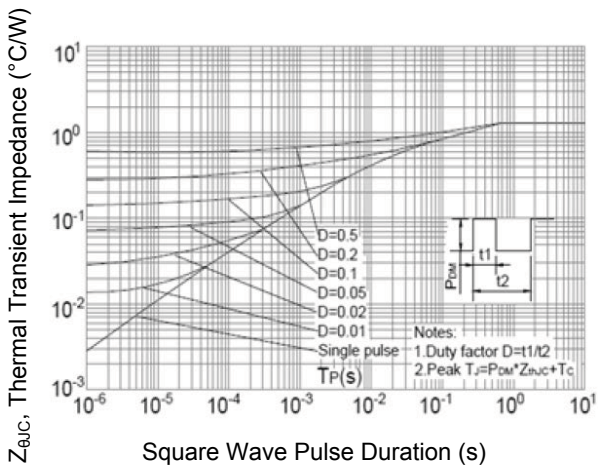
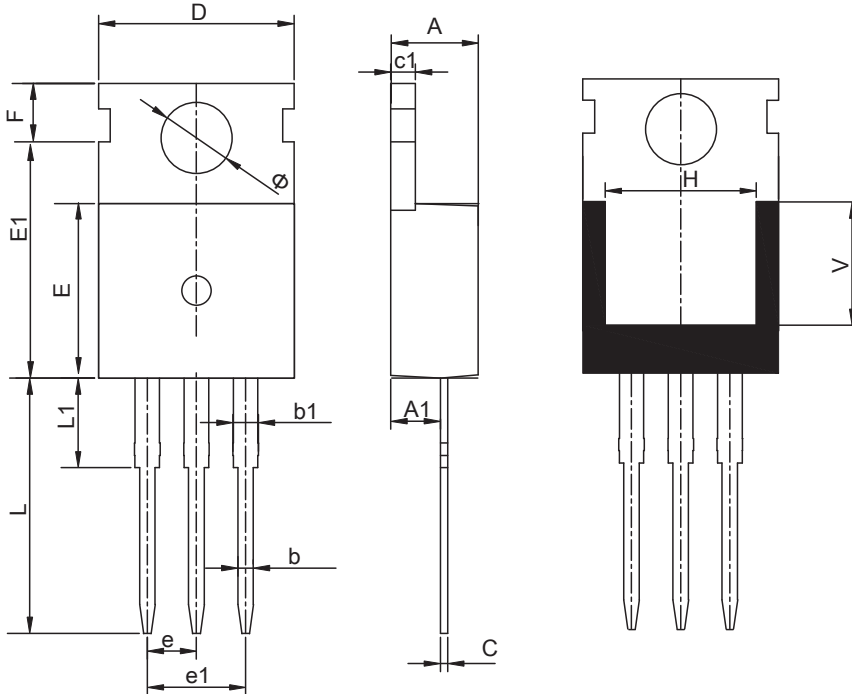


Figure 11. Transient Thermal Impedance

Package Outline Dimensions (TO-220)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.25	2.70	0.089	0.106
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
C	0.33	0.65	0.013	0.026
c1	1.20	1.40	0.047	0.055
D	9.91	10.25	0.390	0.404
E	8.95	9.75	0.352	0.384
E1	12.65	13.00	0.498	0.512
e	2.54 TYP		0.100 TYP	
e1	4.98	5.18	0.196	0.204
F	2.65	2.95	0.104	0.116
H	7.90	8.10	0.311	0.319
L	12.90	13.40	0.508	0.528
L1	2.68	3.25	0.106	0.128
V	6.90 REF		0.272 REF	
Φ	3.40	3.80	0.134	0.150

Order Information

Device	Package	Marking	Carrier	Quantity
GSFH03152	TO-220	H3006	Tube	50pcs / Tube

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