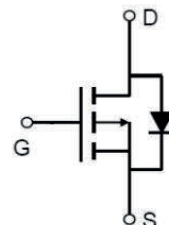
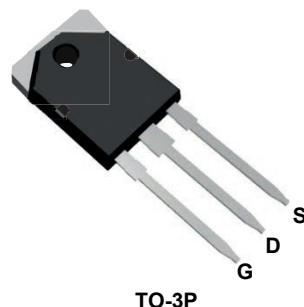


Main Product Characteristics

BV_{DSS}	-150V
$R_{DS(ON)}$	78m Ω (Typ)
I_D	-30A



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 GSFV15P30 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 ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-150	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-30	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-21.2	A
Pulsed Drain Current	I_{DM}	-120	A
Maximum Power Dissipation	P_D	180	W
Derating Factor		1.2	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ⁴	E_{AS}	338	mJ
Thermal Resistance, Junction-to-Case ¹	$R_{\theta JC}$	0.83	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient ³	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 To +175	$^\circ\text{C}$

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-150	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-150V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage ²	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.5	-1.8	-2.5	V
Drain-Source On-State Resistance ²	R _{DS(ON)}	V _{GS} =-10V, I _D =-20A	-	78	88	mΩ
		V _{GS} =-4.5V, I _D =-20A	-	81	95	mΩ
Forward Transconductance ²	g _{fs}	V _{DS} =-10V, I _D =-20A	-	50	-	S
Dynamic and Switching Characteristics						
Input Capacitance ³	C _{iss}	V _{DS} =-75V, V _{GS} =0V, F=1.0MHz	-	6015	-	pF
Output Capacitance ³	C _{oss}		-	117	-	
Reverse Transfer Capacitance ³	C _{rss}		-	85	-	
Turn-On Delay Time ³	t _{d(on)}	V _{DD} =-75V, I _D =-20A, V _{GS} =-10V, R _{GEN} =9.1Ω	-	17	-	nS
Turn-On Rise Time ³	t _r		-	80	-	
Turn-Off Delay Time ³	t _{d(off)}		-	45	-	
Turn-Off Fall Time ³	t _f		-	65	-	
Total Gate Charge ³	Q _g	V _{DS} =-75V, I _D =-20A, V _{GS} =-10V	-	124	-	nC
Gate-Source Charge ³	Q _{gs}		-	20	-	
Gate-Drain Charge ³	Q _{gd}		-	28	-	
Source-Drain Ratings and Characteristics						
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =-20A	-	-	-1.2	V
Diode Forward Current ¹	I _S	-	-	-	-30	A
Reverse Recovery Time ²	T _{rr}	T _J =25°C, I _F =-20A, di/dt=100A/μs	-	90	-	nS
Reverse Recovery Charge ²	Q _{rr}		-	145	-	nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design, and the maximum temperature of 150 $^\circ\text{C}$ may be used if the PCB allows it.
2. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production.
4. EAS condition: $T_J=25^\circ\text{C}, V_{DD}=-50V, V_G=-10V, L=0.5mH, R_g=25\Omega$.

Typical Electrical and Thermal Characteristic Curves

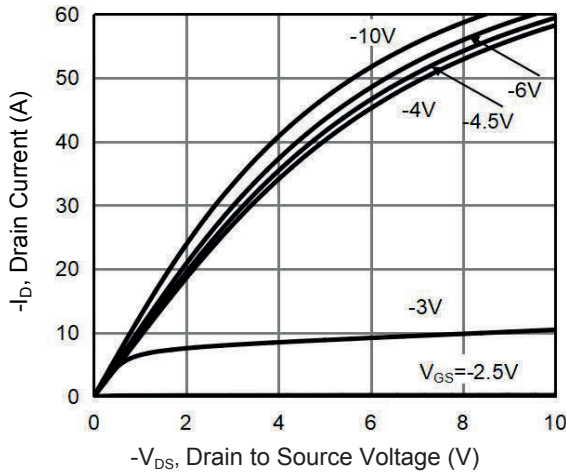


Figure 1. Output Characteristics

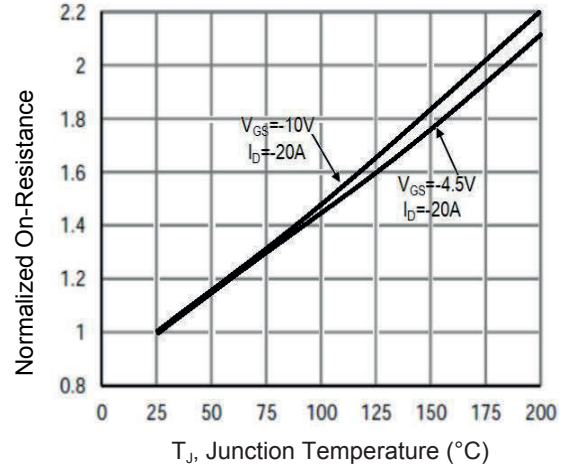


Figure 2. $R_{DS(ON)}$ vs. Junction Temperature

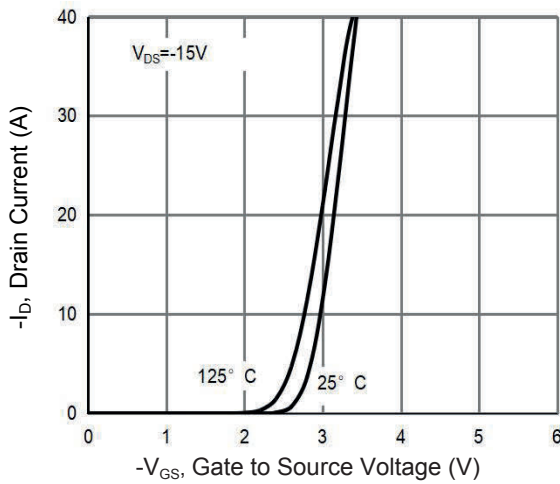


Figure 3. Transfer Characteristics

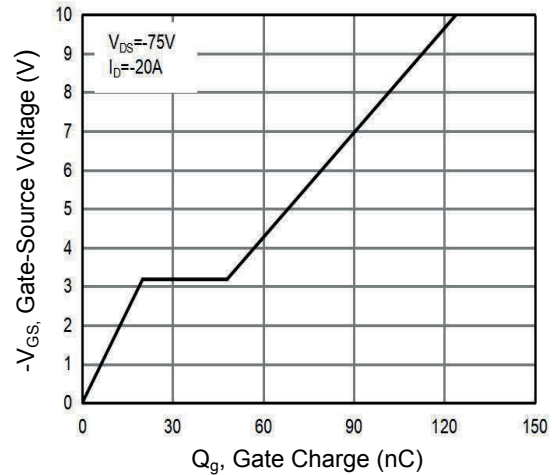


Figure 4. Gate Charge

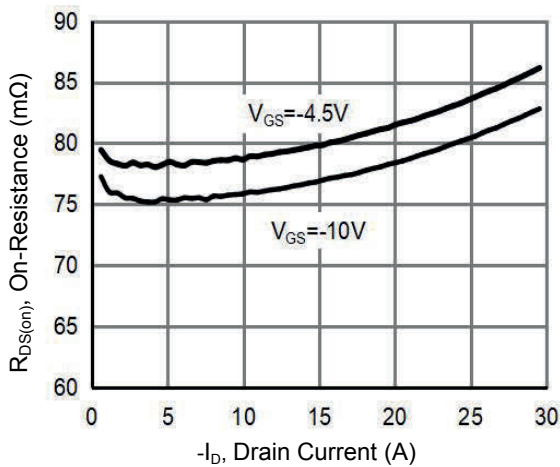


Figure 5. $R_{DS(ON)}$ vs. Drain Current

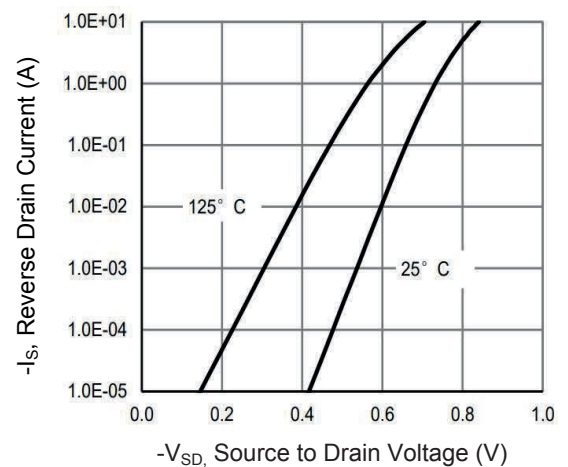


Figure 6. Source-Drain Diode Forward Voltage

Typical Electrical and Thermal Characteristic Curves

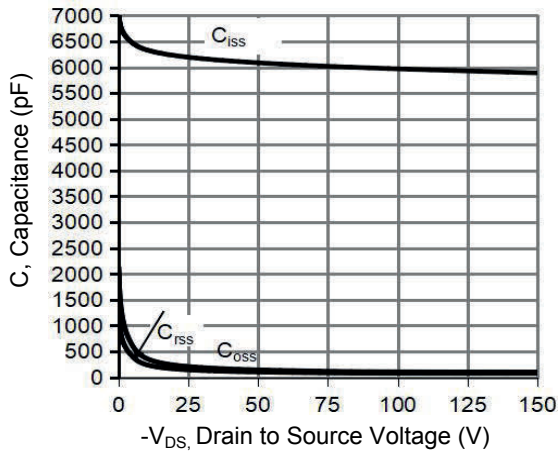


Figure 7. Capacitance vs. V_{DS}

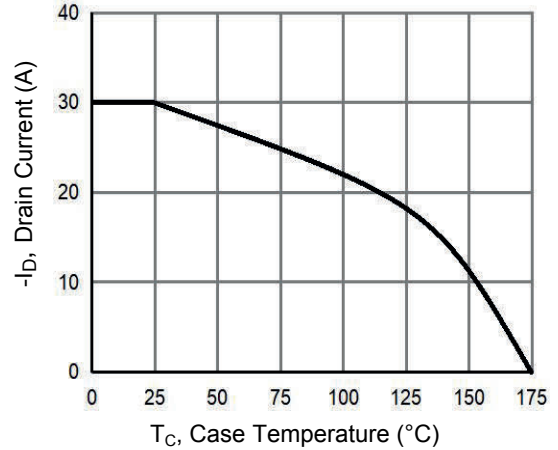


Figure 8. Drain Current vs. T_C

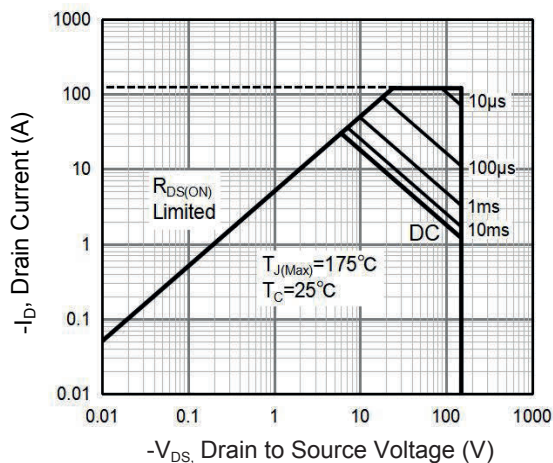


Figure 9. Safe Operating Area

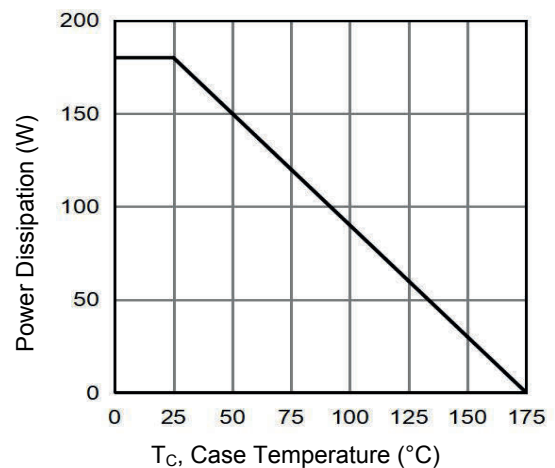


Figure 10. Power De-rating

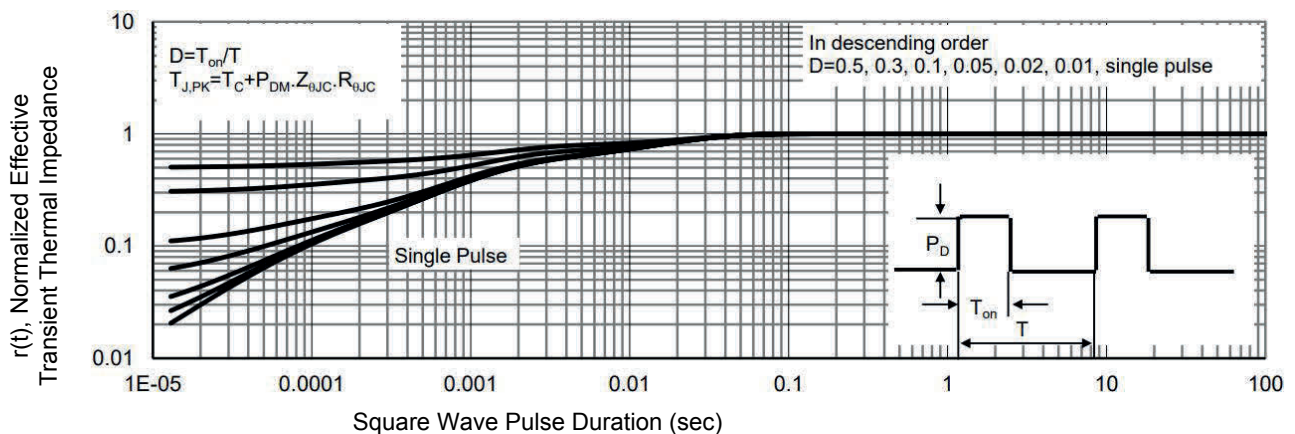
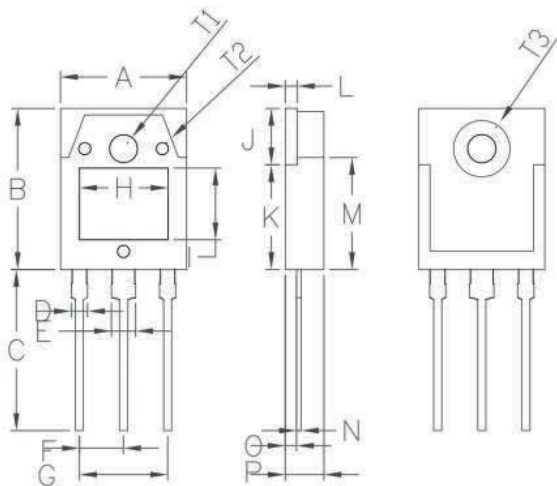


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (TO-3P)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	15.50	15.70	0.610	0.618
B	19.70	20.10	0.776	0.791
C	20.10	20.50	0.791	0.807
D	2.00 REF		0.079 REF	
E	3.00 REF		0.118 REF	
F	5.45 REF		0.215 REF	
G	10.90 REF		0.429 REF	
H	10.80	11.00	0.425	0.433
I	8.80	9.00	0.346	0.354
J	6.85	7.15	0.270	0.281
K	12.75	13.05	0.502	0.514
L	1.49	1.51	0.059	0.059
M	13.70	14.00	0.539	0.551
N	0.59	0.61	0.023	0.024
O	1.32	1.48	0.052	0.058
P	4.70	4.90	0.185	0.193
T1	3.50 REF		0.138 REF	
T2	1.50 REF		0.059 REF	
T3	7.00 REF		0.276 REF	

Order Information

Device	Package	Marking	Carrier	Quantity
GSFV15P30	TO-3P	V15P30	Tube	30pcs / Tube