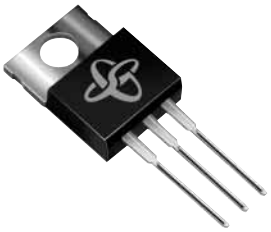
GENERAL SEMICONDUCTOR®

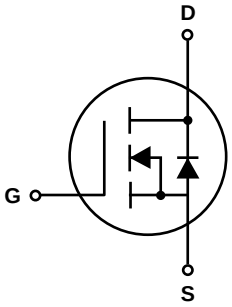
GFP70N03

N-Channel Enhancement-Mode MOSFET

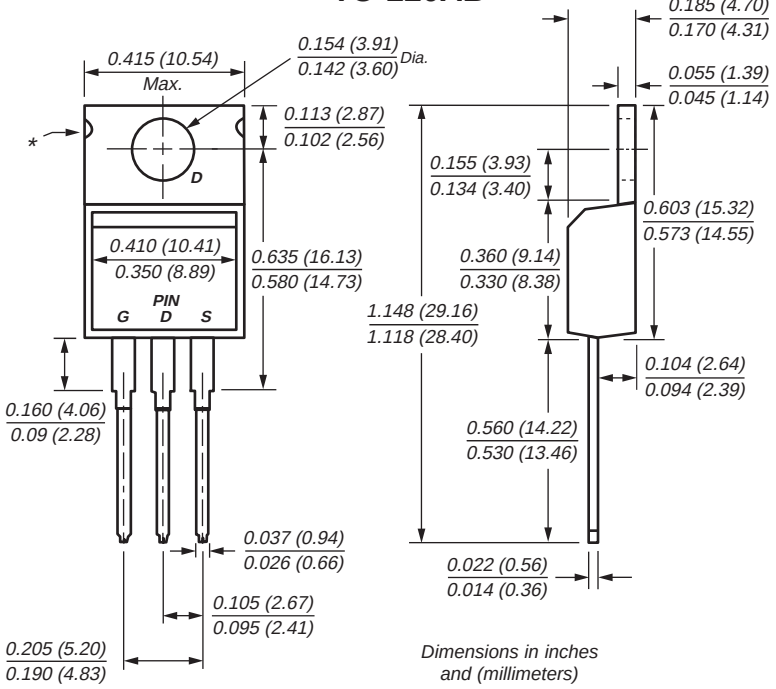
V_{DS} 30V **$R_{DS(ON)}$** 8mΩ **I_D** 70A



TRENCH GENFET®



TO-220AB



* May be notched or flat

Features

- Advanced Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Specially Designed for Low Voltage DC/DC Converters
- Fast Switching for High Efficiency

Mechanical Data

Case: JEDEC TO-220AB molded plastic body

Terminals: Leads solderable per MIL-STD-750, Method 2026

High temperature soldering guaranteed: 250°C/10 seconds, 0.17" (4.3mm) from case

Mounting Torque: 10 in-lbs maximum

Weight: 2.0g

Maximum Ratings and Thermal Characteristics (T_C = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current(1)		I_D	70	A
Pulsed Drain Current		I_{DM}	200	
Maximum Power Dissipation	T_C = 25°C T_C = 100°C	P_D	62.5 25	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150	°C
Lead Temperature (1/8" from case for 5 sec.)		T_L	275	°C
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	2.0	°C/W
Junction-to-Ambient Thermal Resistance		$R_{\theta JA}$	62.5	°C/W

Notes: (1) Maximum DC current limited by the package

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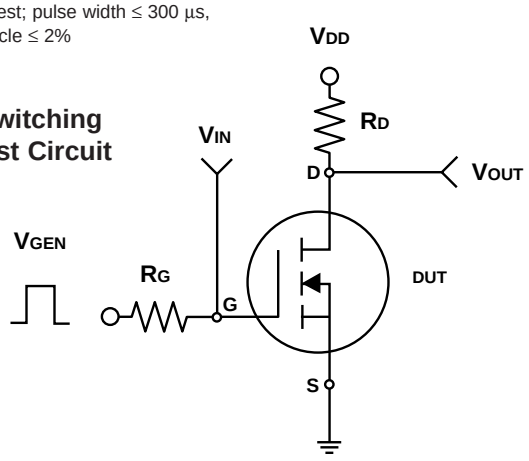
Electrical Characteristics (T_J = 25°C unless otherwise noted)

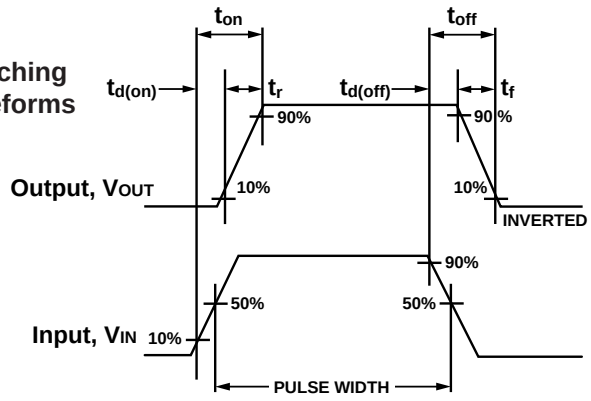
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250µA	30	—	—	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	1.0	—	3.0	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	—	—	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V	—	—	1	µA
On-State Drain Current(2)	$I_{D(on)}$	V_{DS} ≥ 5V, V_{GS} = 10V	70	—	—	A
Drain-Source On-State Resistance(2)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 35A	—	6	8	mΩ
		V_{GS} = 4.5V, I_D = 30A	—	9	11	
Forward Transconductance(2)	g_{fs}	V_{DS} = 15V, I_D = 35A	—	61	—	S
Dynamic						
Total Gate Charge	Q_g	V_{DS} =15V, V_{GS}=5V, I_D=35A	—	34	48	nC
		V_{DS} = 15V, V_{GS} = 10V, I_D = 35A	—	63	95	
Gate-Source Charge	Q_{gs}		—	11	—	
Gate-Drain Charge	Q_{gd}		—	11	—	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 15V, R_L = 15Ω, I_D ≅ 1A, V_{GEN} = 10V, R_G = 6Ω	—	9	14	ns
Rise Time	t_r		—	9	14	
Turn-Off Delay Time	$t_{d(off)}$		—	100	167	
Fall Time	t_f		—	31	62	
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1.0MHz	—	3400	—	pF
Output Capacitance	C_{oss}		—	618	—	
Reverse Transfer Capacitance	C_{rss}		—	300	—	
Source-Drain Diode						
Max Diode Forward Current	I_S	—	—	—	35	A
Diode Forward Voltage(2)	V_{SD}	I_S = 35A, V_{GS} = 0V	—	0.9	1.3	V

Notes:
(1) Maximum DC current limited by the package
(2) Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%

Switching Test Circuit



Switching Waveforms



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Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Fig. 1 – Output Characteristics

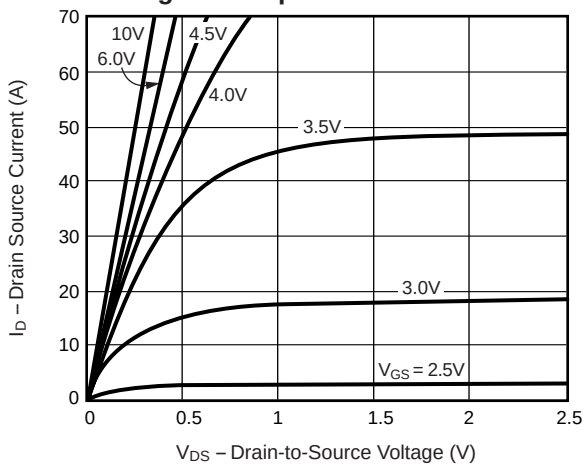

Fig. 2 – Transfer Characteristics

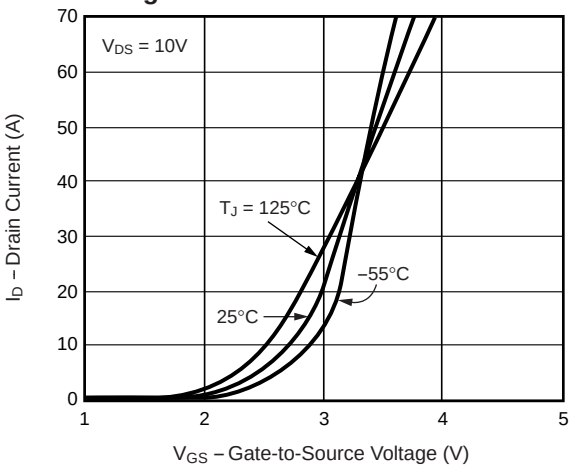

Fig. 3 – Threshold Voltage vs. Temperature

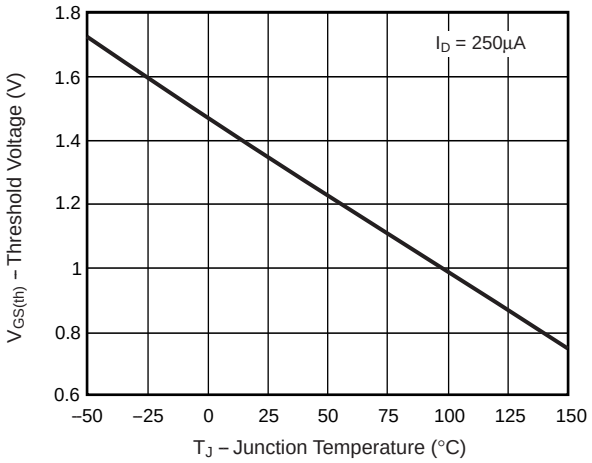

Fig. 4 – On-Resistance vs. Drain Current

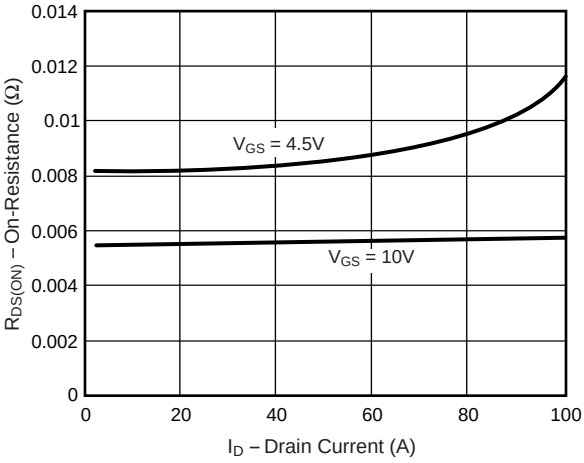

Fig. 5 – On-Resistance vs. Junction Temperature

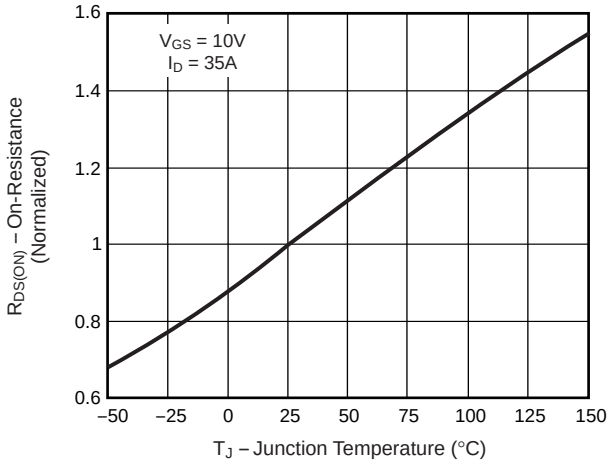

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Fig. 6 – On-Resistance vs. Gate-to-Source Voltage

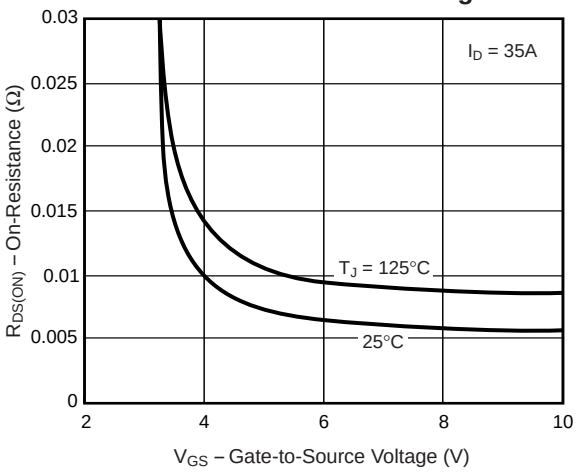


Fig. 7 – Gate Charge

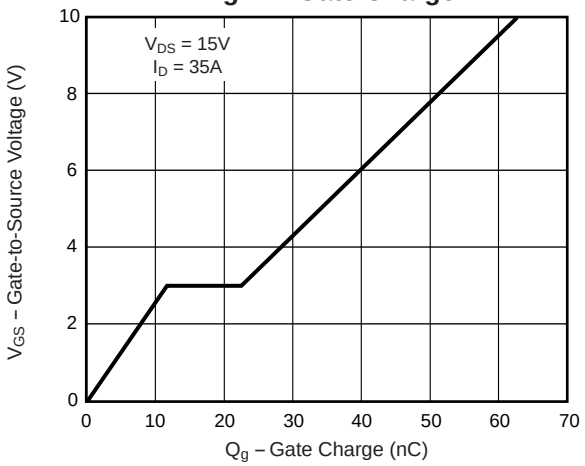


Fig. 8 – Capacitance

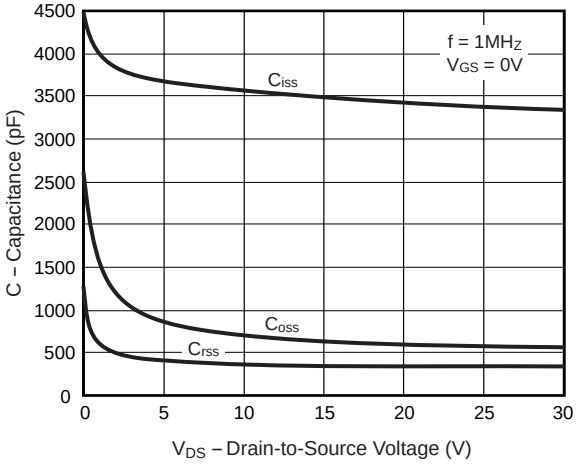
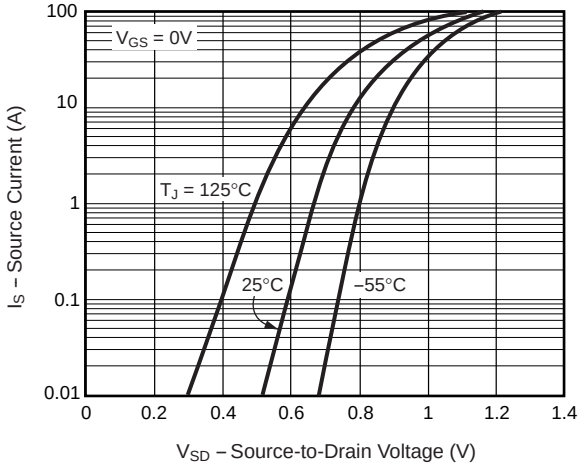


Fig. 9 – Source-Drain Diode Forward Voltage



Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Fig. 10 – Breakdown Voltage vs. Junction Temperature

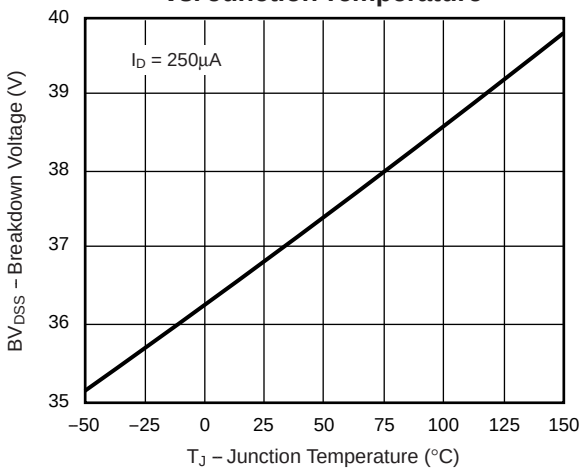


Fig. 11 – Thermal Impedance

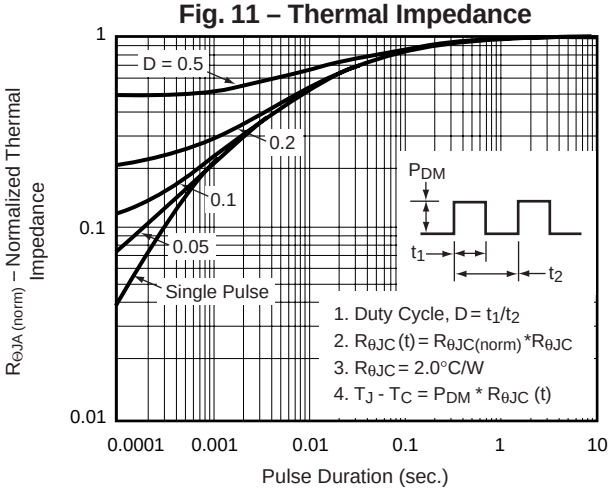


Fig. 12 – Power vs. Pulse Duration

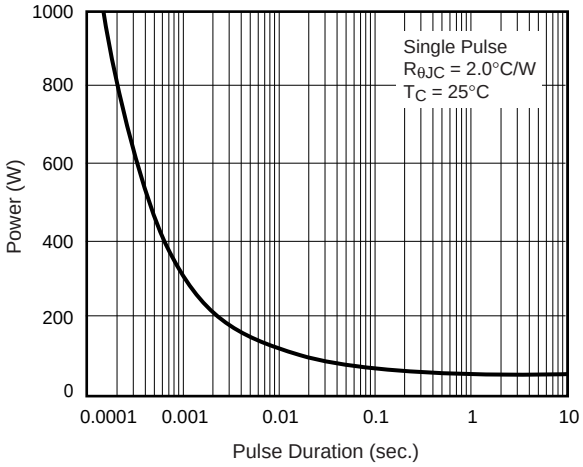


Fig. 13 – Maximum Safe Operating Area