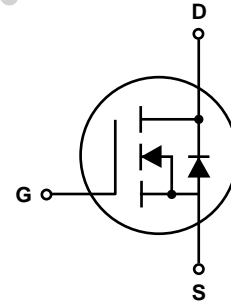


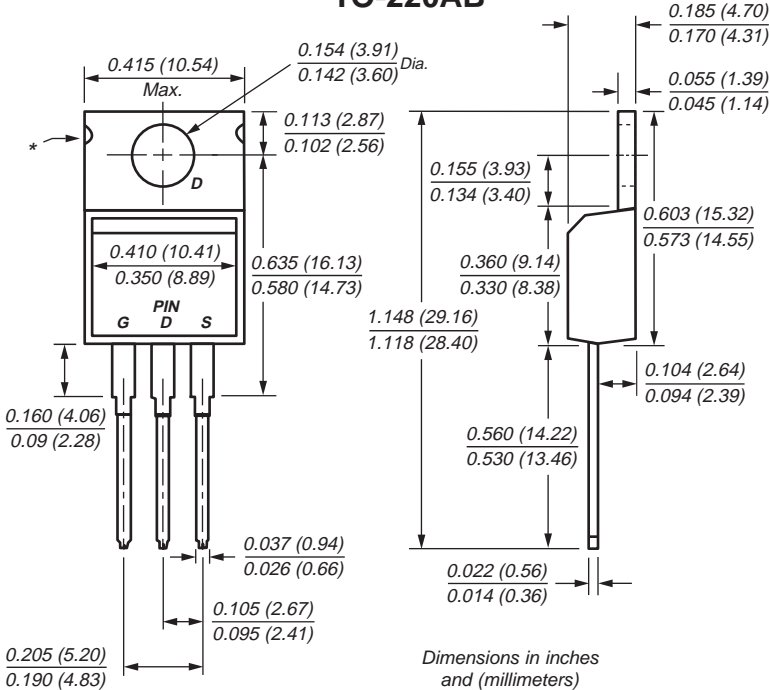
N-Channel Enhancement-Mode MOSFET

V<sub>DS</sub> 30V R<sub>DS(on)</sub> 11mΩ I<sub>D</sub> 60A

TRENCH GENFET®  
New Product



TO-220AB



\* May be notched or flat

Features

- Advanced Trench 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 at terminals

Mounting Torque: 10 in-lbs maximum

Weight: 2.0g

Maximum Ratings and Thermal Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	
Continuous Drain Current <sup>(1)</sup>	I <sub>D</sub>	60	A
Pulsed Drain Current	I <sub>DM</sub>	100	
Maximum Power Dissipation	P <sub>D</sub>	T <sub>C</sub> = 25°C 62.5	W
		T <sub>C</sub> = 100°C 25	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150	°C
Lead Temperature (1/8" from case for 5 sec.)	T <sub>L</sub>	275	°C
Junction-to-Case Thermal Resistance	R <sub>θJC</sub>	2.0	°C/W
Junction-to-Ambient Thermal Resistance	R <sub>θJA</sub>	62.5	°C/W

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

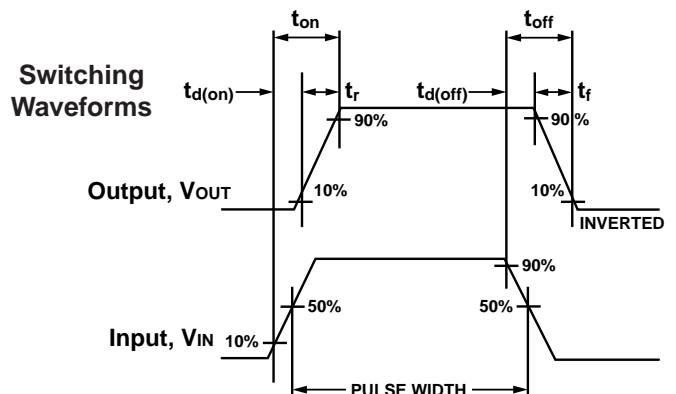
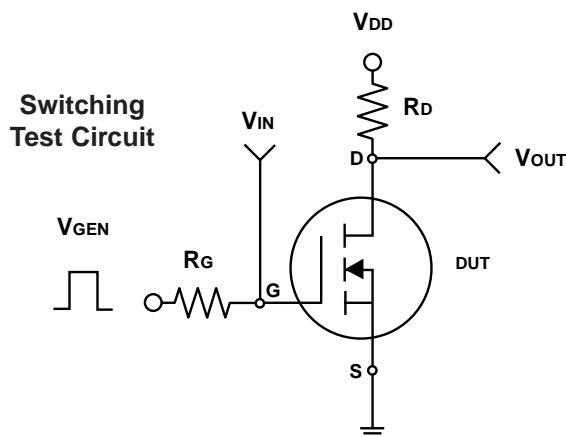
N-Channel Enhancement-Mode MOSFET

Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.0		3.0	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V			1	μA
On-State Drain Current <sup>(1)</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5V, V <sub>GS</sub> = 10V	60			A
Drain-Source On-State Resistance <sup>(1)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A		9	11	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 25A		13	16	
Forward Transconductance <sup>(1)</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 25A		40		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 25A, V <sub>GS</sub> = 0V		0.9	1.3	V
<b>Dynamic<sup>(1)</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =5V, I <sub>D</sub> =50A		16	22	nC
		V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V I <sub>D</sub> = 50A		35	60	
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V I <sub>D</sub> = 50A		8		
Gate-Drain Charge	Q <sub>gd</sub>			6		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15V, R <sub>L</sub> = 15Ω I <sub>D</sub> ≈ 1A, V <sub>GEN</sub> = 10V R <sub>G</sub> = 6Ω		11	20	ns
Rise Time	t <sub>r</sub>			11	20	
Turn-Off Delay Time	t <sub>d(off)</sub>			48	80	
Fall Time	t <sub>f</sub>			15	30	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V	–	1850	–	pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> = 15V	–	315	–	
Reverse Transfer Capacitance	C <sub>rss</sub>	f = 1.0MHz	–	145	–	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 25A, di/dt = 100A/μs		160		ns

Note:

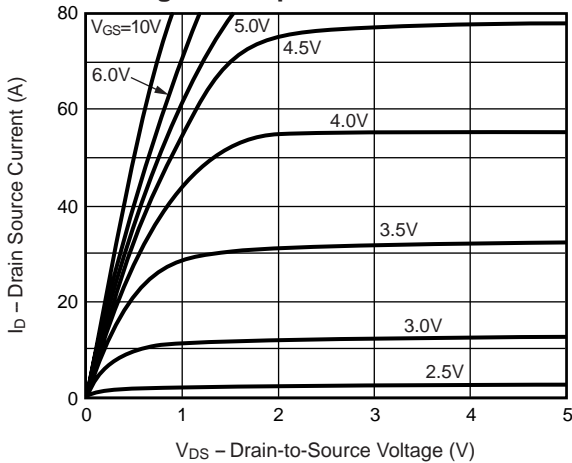
(1) Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%



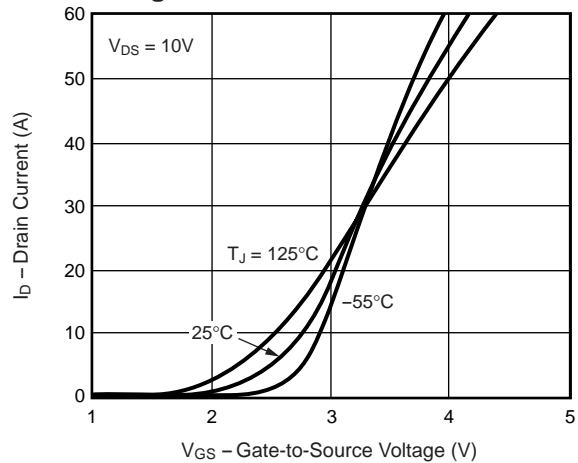
**N-Channel Enhancement-Mode MOSFET**

**Ratings and Characteristic Curves** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

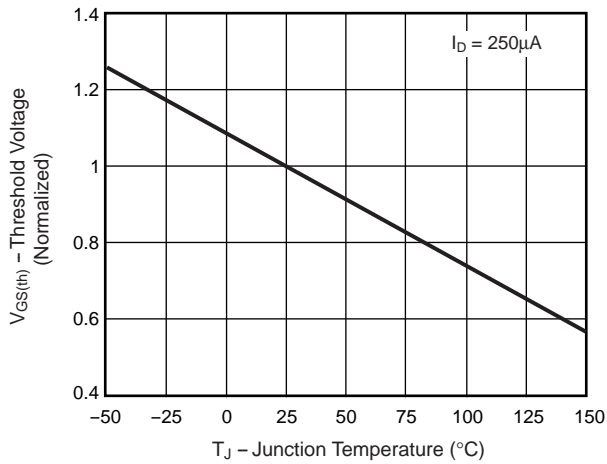
**Fig. 1 – Output Characteristics**



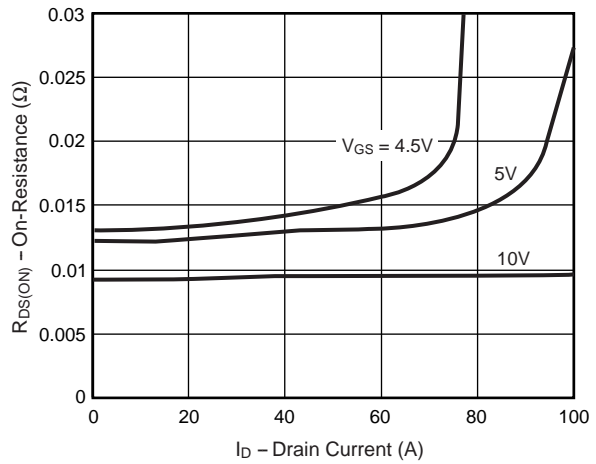
**Fig. 2 – Transfer Characteristics**



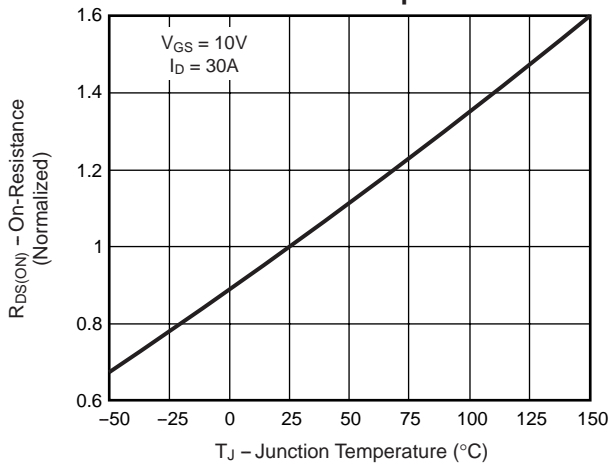
**Fig. 3 – Threshold Voltage vs. Temperature**



**Fig. 4 – On-Resistance vs. Drain Current**



**Fig. 5 – On-Resistance vs. Junction Temperature**



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves (T<sub>A</sub> = 25°C unless otherwise noted)

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

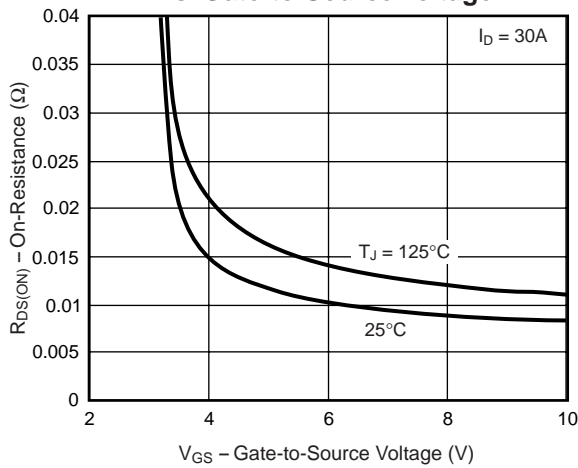


Fig. 7 – Gate Charge

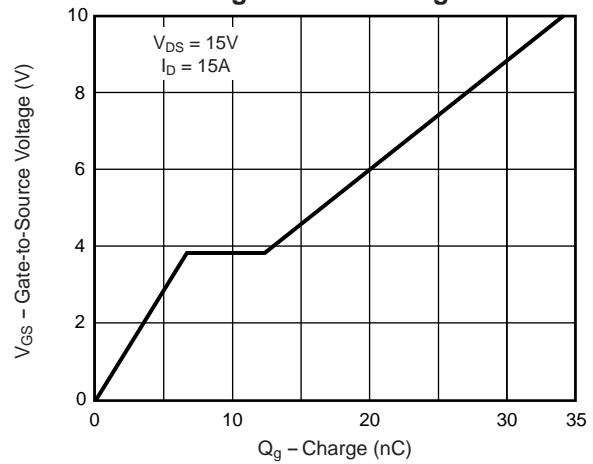


Fig. 8 – Capacitance

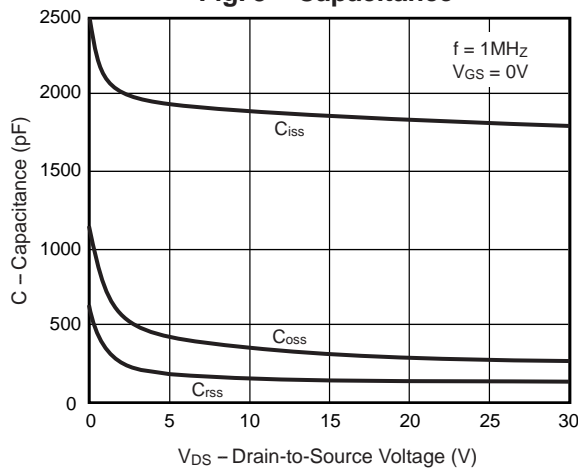
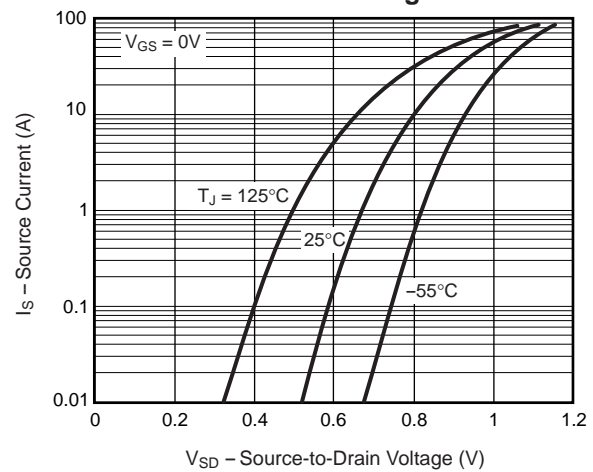


Fig. 9 – Source-Drain Diode Forward Voltage



N-Channel Enhancement-Mode MOSFET

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

Fig. 10 – Breakdown Voltage vs. Junction Temperature

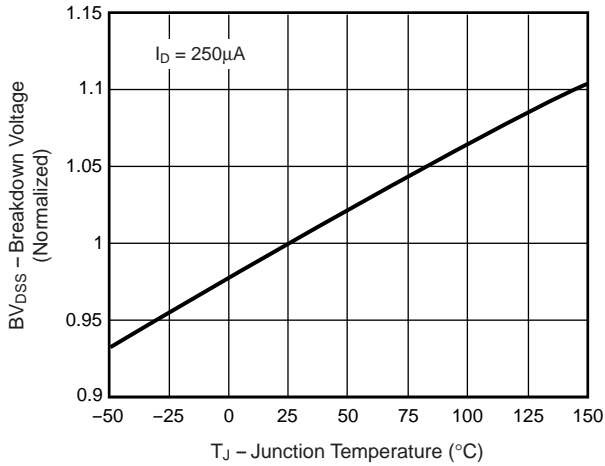


Fig. 11 – Transient Thermal Impedance

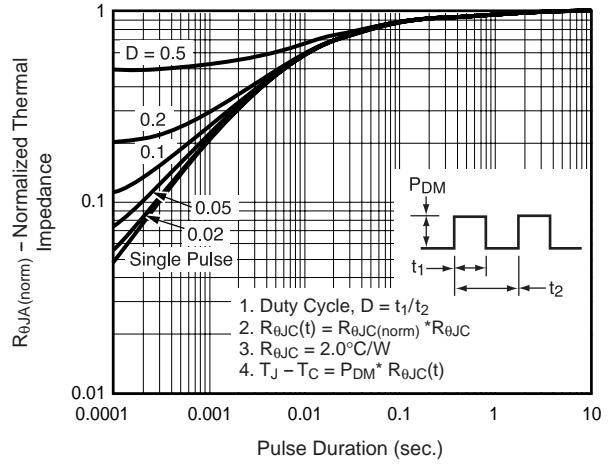


Fig. 12 – Power vs. Pulse Duration

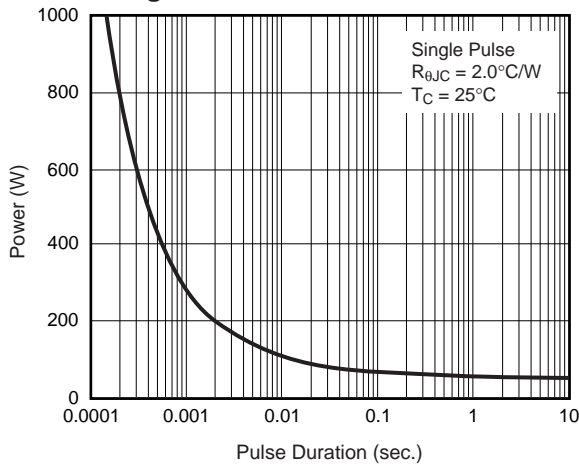


Fig. 13 – Maximum Safe Operating Area

