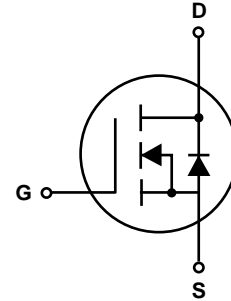
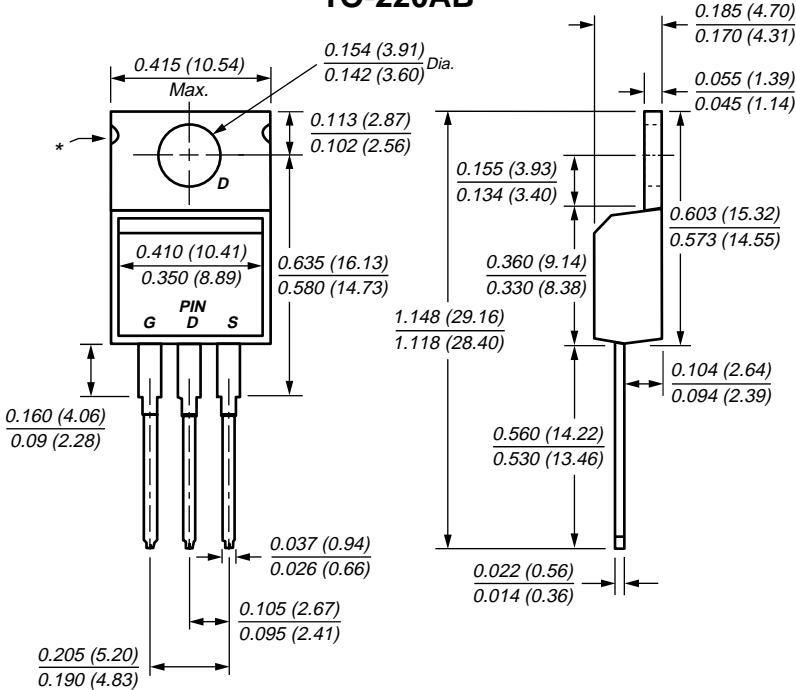


N-Channel Enhancement-Mode MOSFET

V_{DS} 30V $R_{DS(ON)}$ 13mΩ I_D 50A

TRENCH GENFET™
New Product

TO-220AB



Features

- Dynamic dv/dt Rating
- Repetitive Avalanche Rated
- 175°C Operating Temperature
- Ease of Paralleling
- Fast Switching for High Efficiency
- Simple Drive Requirements

Mechanical Data

Case: JEDEC TO-220AB molded plastic body

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

Mounting Torque: 10 in-lbs maximum

Weight: 2.0g

* May be notched or flat

Dimensions in inches and (millimeters)

Maximum Ratings and Thermal Characteristics ($T_A = 25^\circ\text{C}$ 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	50	A
Pulsed Drain Current	I_{DM}	100	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	
Lead Temperature (1/8" from case for 5 sec.)	T_L	275	$^\circ\text{C}$
Junction-to-Case	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
Junction-to-Ambient (PCB Mounted)	$R_{\theta JA}$	40	$^\circ\text{C/W}$

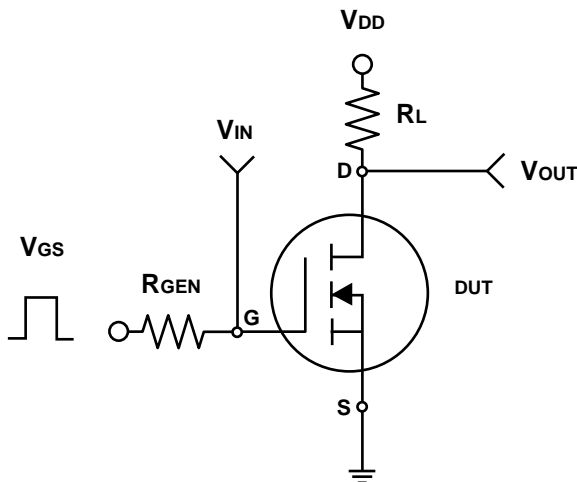
Note: (1) Surface Mounted on FR4 Board, $t \leq 10$ sec.

N-Channel Enhancement-Mode MOSFET

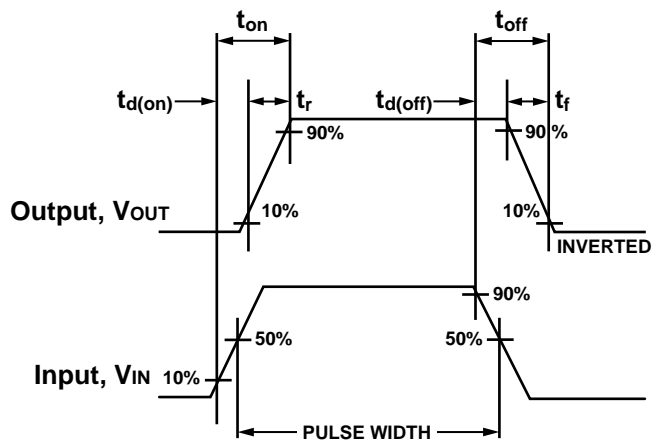
Electrical Characteristics (T_J = 25°C unless otherwise noted)

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	
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 ⁽¹⁾	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} = 10V	60			A
Drain-Source On-State Resistance ⁽¹⁾	R _{DSON}	V _{GS} = 10V, I _D = 25A		11	13	mΩ
		V _{GS} = 4.5V, I _D = 20A		15	20	
Forward Transconductance ⁽¹⁾	g _{fs}	V _{DS} = 10V, I _D = 25A		40		S
Diode Forward Voltage	V _{SD}	I _S = 25A, V _{GS} = 0V		0.9	1.3	V
Dynamic⁽¹⁾						
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V I _D = 50A		35	60	nC
Gate-Source Charge	Q _{gs}			8		
Gate-Drain Charge	Q _{gd}			6		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, R _L = 15Ω I _D ≈ 1A, V _{GEN} = 10V R _G = 6Ω		11	20	ns
Rise Time	t _r			11	20	
Turn-Off Delay Time	t _{d(off)}			48	80	
Fall Time	t _f			15	30	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 25A, di/dt = 100A/μs		160		

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



Switching Test Circuit



Switching Waveforms

N-Channel Enhancement-Mode MOSFET

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

Fig. 1 – Output Characteristics

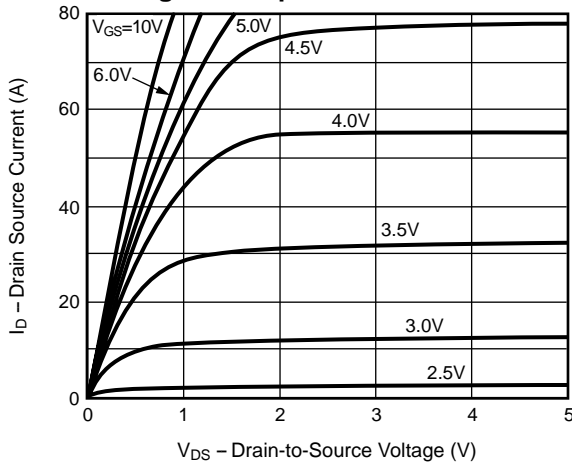


Fig. 2 – Transfer Characteristics

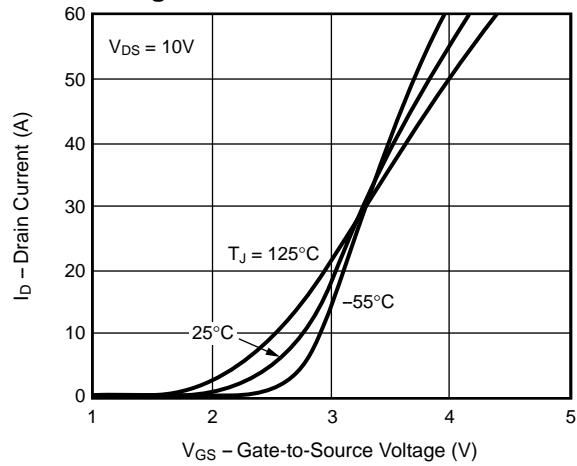


Fig. 3 – Threshold Voltage vs. Temperature

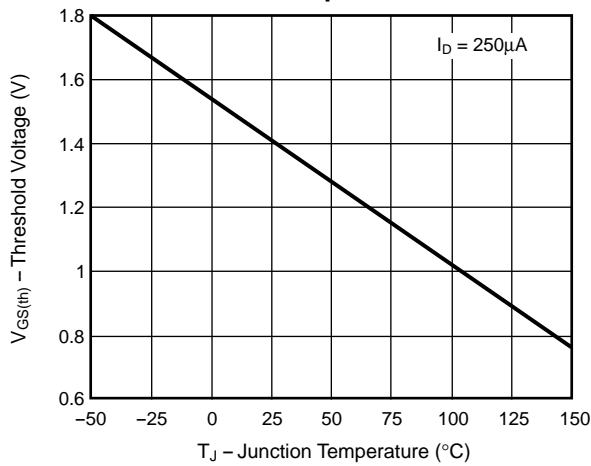


Fig. 4 – On-Resistance vs. Drain Current

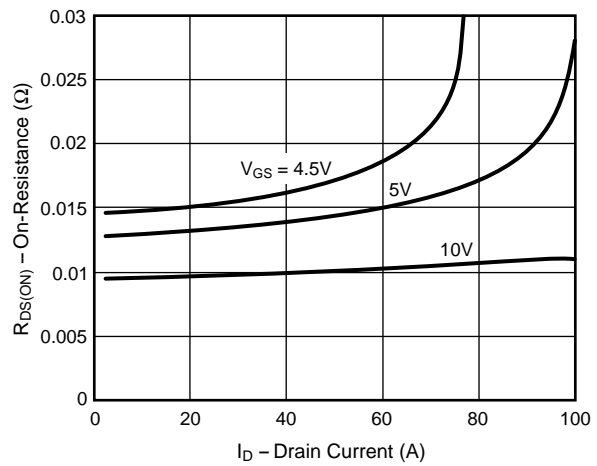


Fig. 5 – On-Resistance vs. Junction Temperature

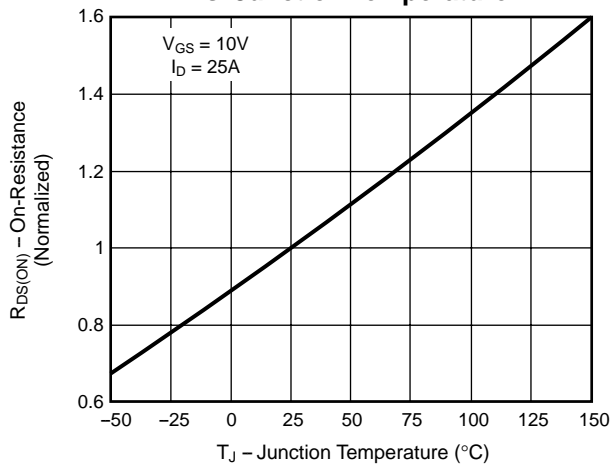
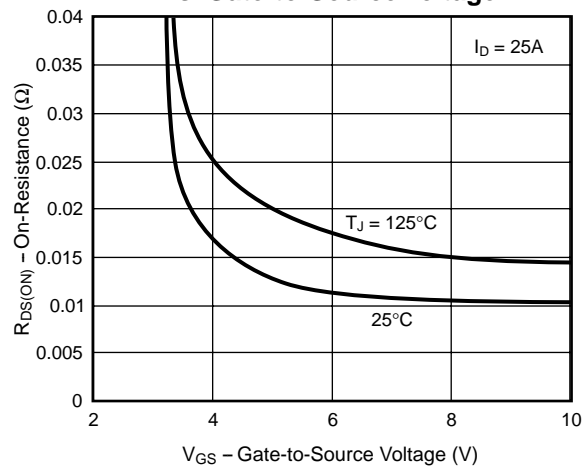


Fig. 6 – On-Resistance vs. Gate-to-Source Voltage



N-Channel Enhancement-Mode MOSFET

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

Fig. 7 – Gate Charge

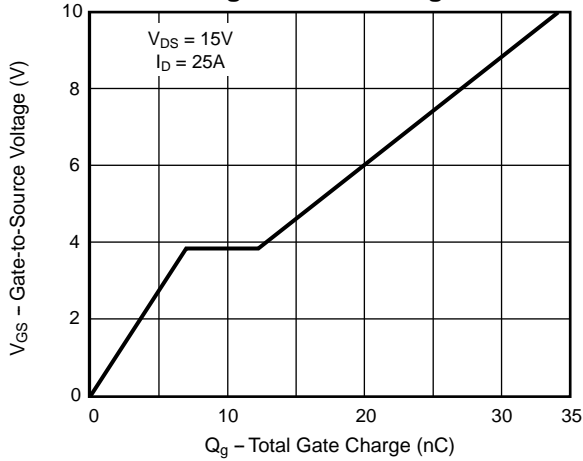


Fig. 8 – Capacitance

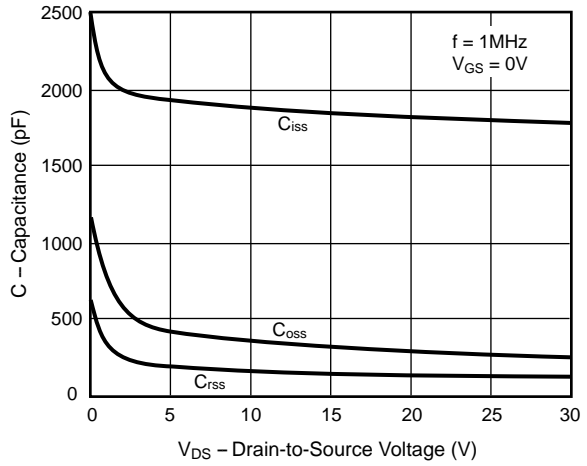


Fig. 9 – Source-Drain Diode Forward Voltage

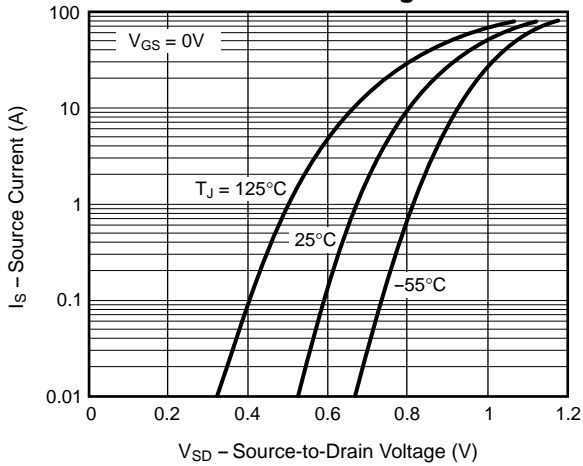


Fig. 10 – Breakdown Voltage vs. Temperature

