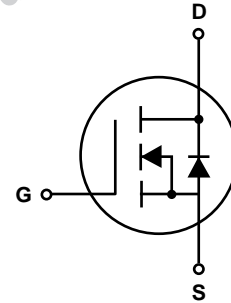


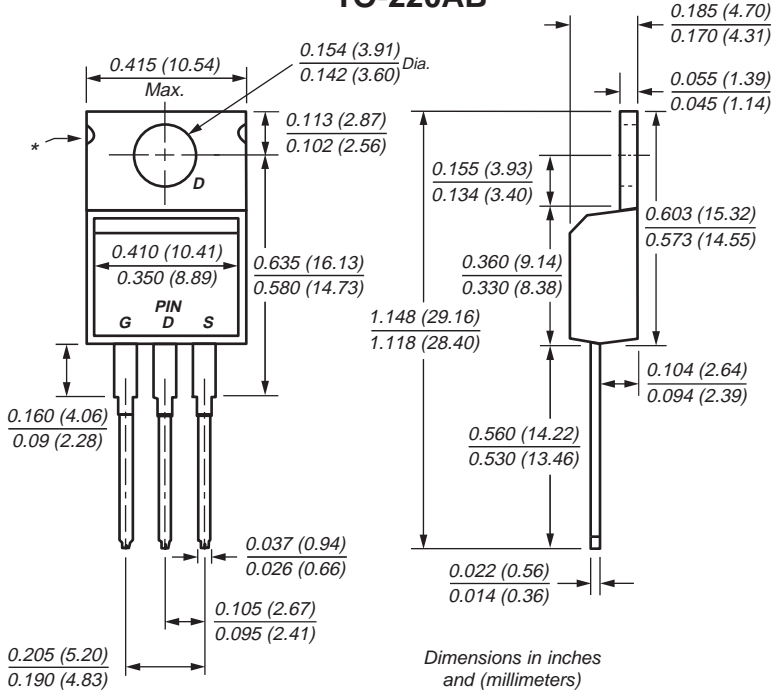
N-Channel Enhancement-Mode MOSFET

V_{DS} 30V $R_{DS(on)}$ 11mΩ I_D 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 ($T_C = 25^\circ\text{C}$ 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	60	A
Pulsed Drain Current	I_{DM}	100	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$ 62.5	W
		$T_C = 100^\circ\text{C}$ 25	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Lead Temperature (1/8" from case for 5 sec.)	T_L	275	$^\circ\text{C}$
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

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

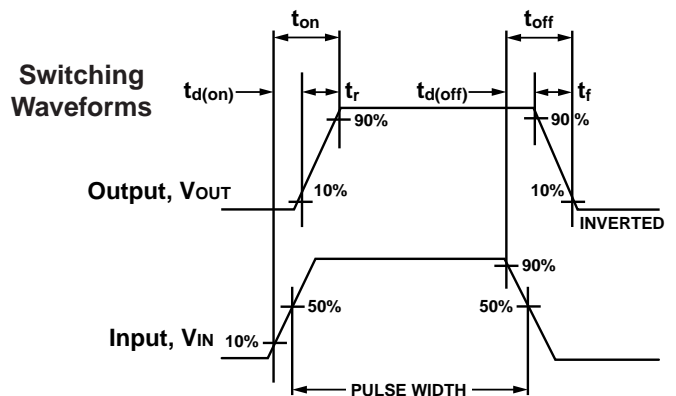
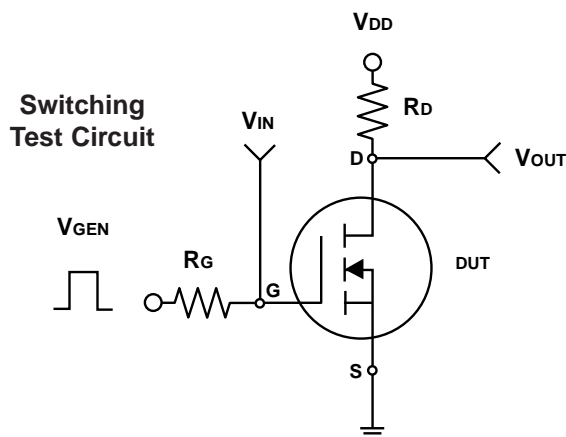
N-Channel Enhancement-Mode MOSFET

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			1	μA
On-State Drain Current ⁽¹⁾	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS} = 10V$	60			A
Drain-Source On-State Resistance ⁽¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		9	11	m Ω
		$V_{GS} = 4.5V, I_D = 25A$		13	16	
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	$V_{DS}=15V, V_{GS}=5V, I_D=50A$		16	22	nC
		$V_{DS} = 15V, V_{GS} = 10V, I_D = 50A$		35	60	
Gate-Source Charge	Q_{gs}	$V_{DS} = 15V, V_{GS} = 10V, I_D = 50A$		8		
Gate-Drain Charge	Q_{gd}			6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15V, R_L = 15\Omega, I_D \approx 1A, V_{GEN} = 10V, R_G = 6\Omega$		11	20	ns
Rise Time	t_r			11	20	
Turn-Off Delay Time	$t_{d(off)}$			48	80	
Fall Time	t_f			15	30	
Input Capacitance	C_{iss}	$V_{GS} = 0V$	–	1850	–	pF
Output Capacitance	C_{oss}	$V_{DS} = 15V$	–	315	–	
Reverse Transfer Capacitance	C_{rss}	$f = 1.0MHz$	–	145	–	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 25A, di/dt = 100A/\mu s$		160		ns

Note:

(1) Pulse test; pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$



N-Channel Enhancement-Mode MOSFET

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

Fig. 1 – Output Characteristics

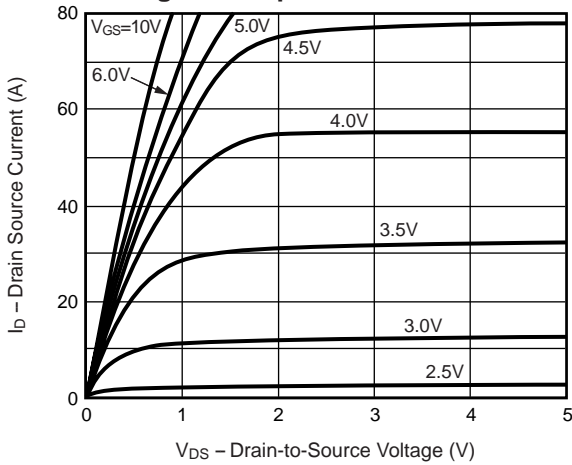


Fig. 2 – Transfer Characteristics

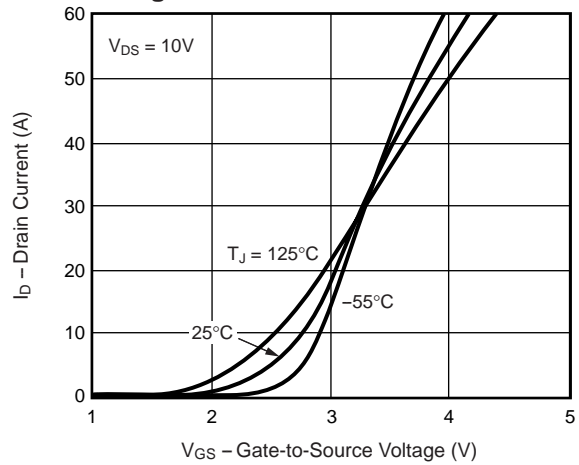


Fig. 3 – Threshold Voltage vs. Temperature

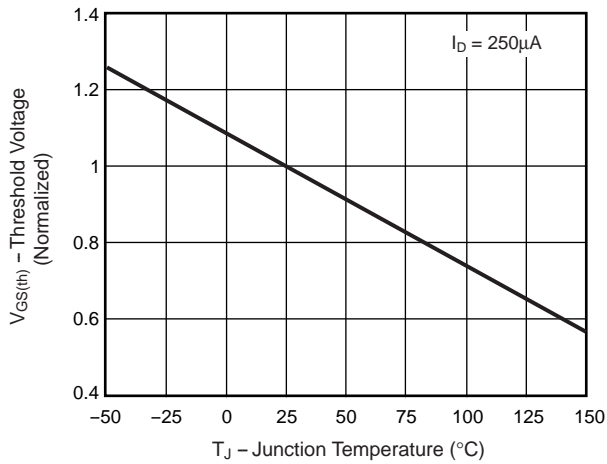


Fig. 4 – On-Resistance vs. Drain Current

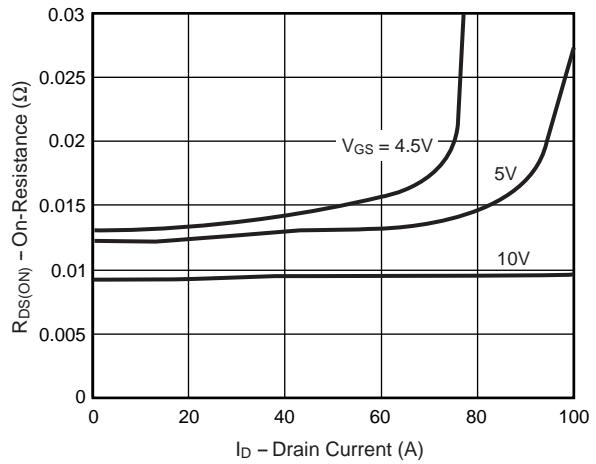
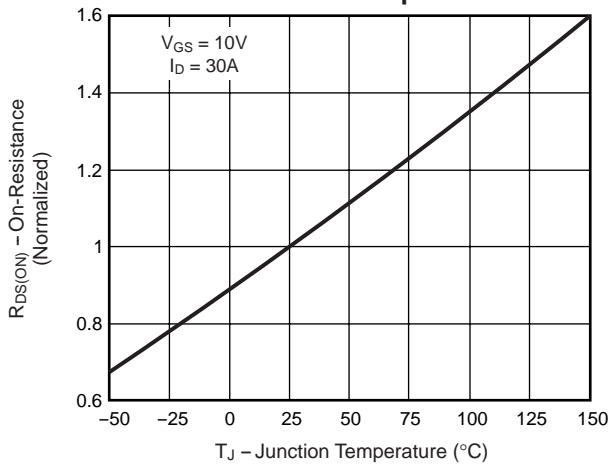


Fig. 5 – On-Resistance vs. Junction Temperature



N-Channel Enhancement-Mode MOSFET

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

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

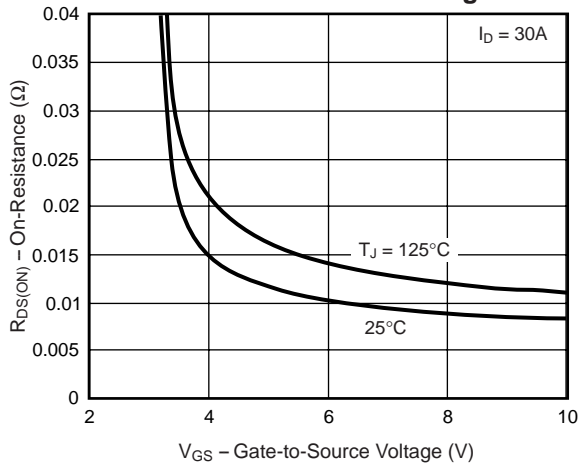


Fig. 7 – Gate Charge

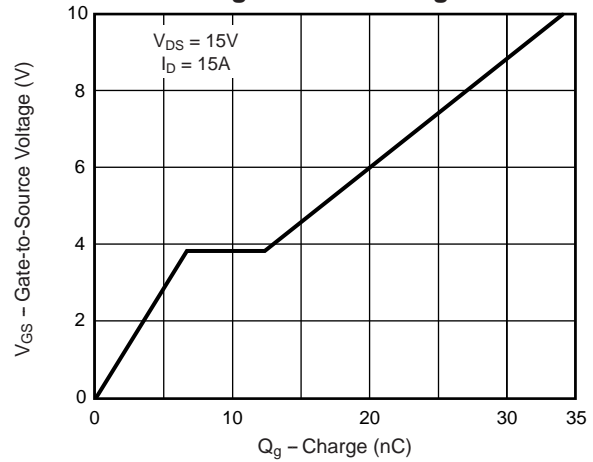


Fig. 8 – Capacitance

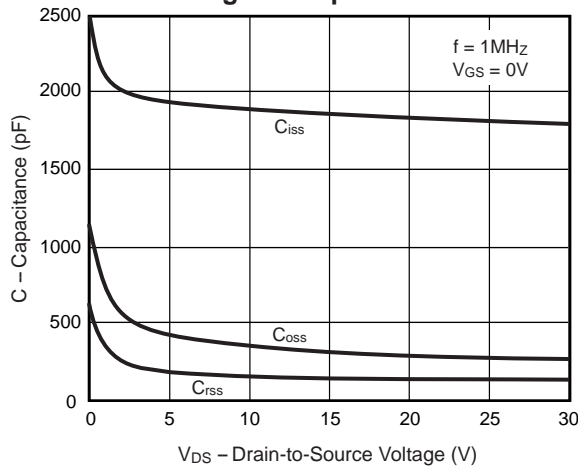
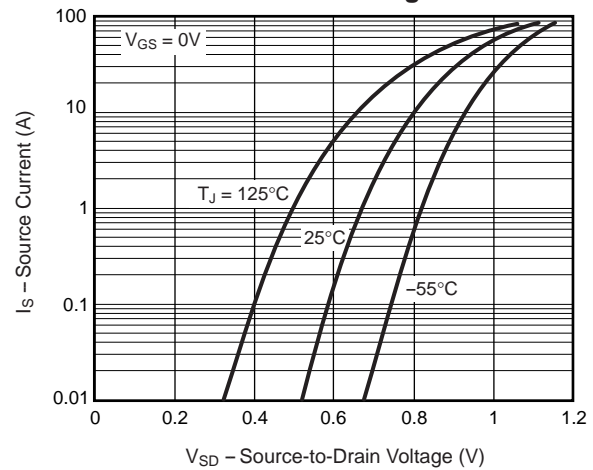


Fig. 9 – Source-Drain Diode Forward Voltage



N-Channel Enhancement-Mode MOSFET

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

Fig. 10 – Breakdown Voltage vs. Junction Temperature

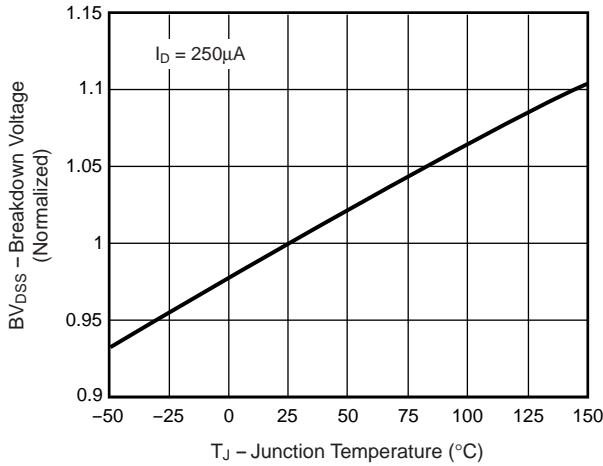


Fig. 11 – Transient Thermal Impedance

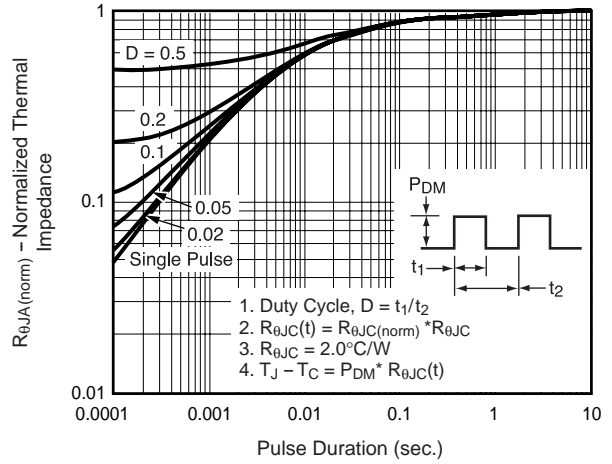


Fig. 12 – Power vs. Pulse Duration

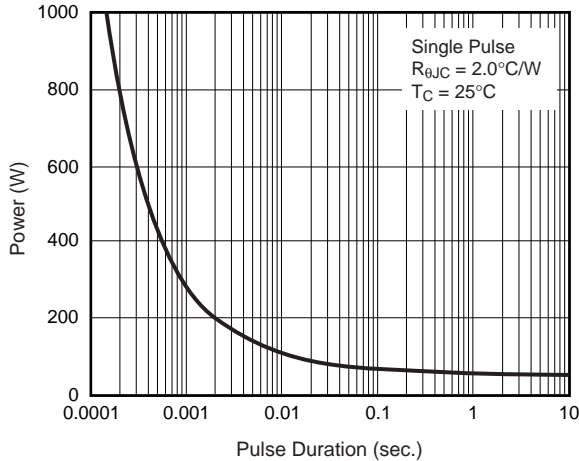


Fig. 13 – Maximum Safe Operating Area

