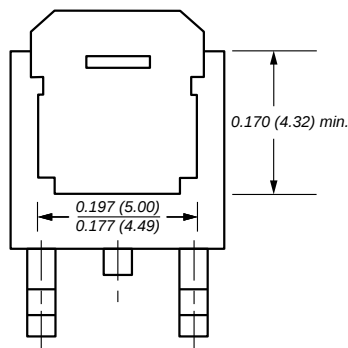
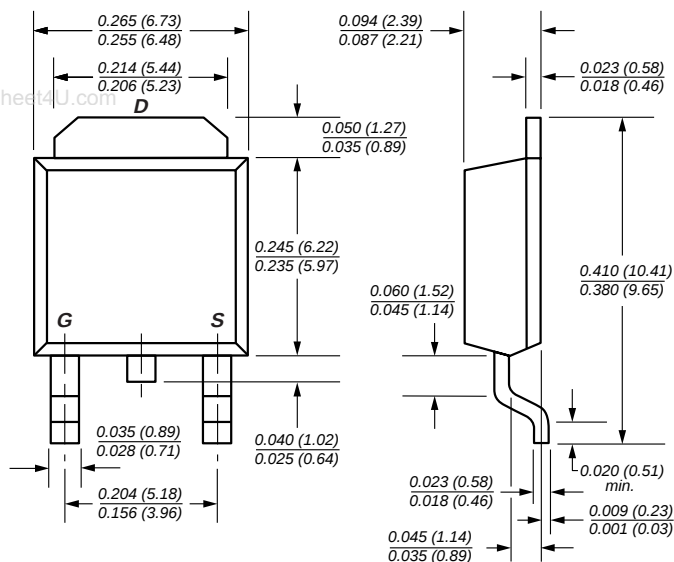
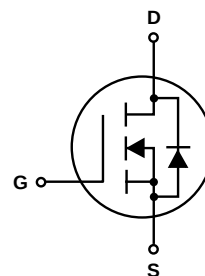
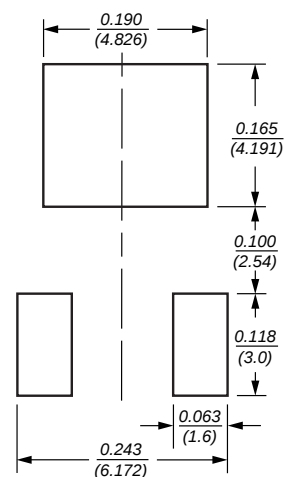




N-Channel Enhancement-Mode MOSFET

 V_{DS} 30V
 $R_{DS(ON)}$ 15m Ω
 I_D 43ATRENCH
GENFET®

TO-252 (DPAK)

Dimensions in inches
and (millimeters)

Mounting Pad Layout

Mechanical Data

Case: JEDEC TO-252 molded plastic body**Terminals:** Solder plated, solderable per MIL-STD-750, Method 2026**High temperature soldering guaranteed:**
250°C/10 seconds at terminals**Weight:** 0.011oz., 0.4g

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

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	I_D	43	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	120	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	W
		44.5 17.8	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	2.8	$^\circ\text{C/W}$
Junction-to-Ambient Thermal Resistance ⁽²⁾	$R_{\theta JA}$	50	

Note: (1) Pulse width limited by maximum junction temperature(2) 1-in² 2oz. Cu PCB mounted

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 _{GS} = ±20V, V _{DS} = 0V	–	–	±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	40	–	–	A
Drain-Source On-State Resistance ⁽²⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 20A	–	12.5	15	mΩ
		V _{GS} = 4.5V, I _D = 17A	–	17.5	21	
Forward Transconductance ⁽¹⁾	g _{fs}	V _{DS} = 15V, I _D = 20A	–	35	–	S

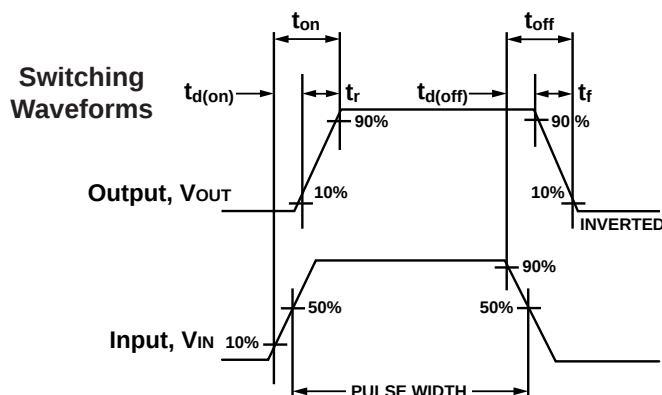
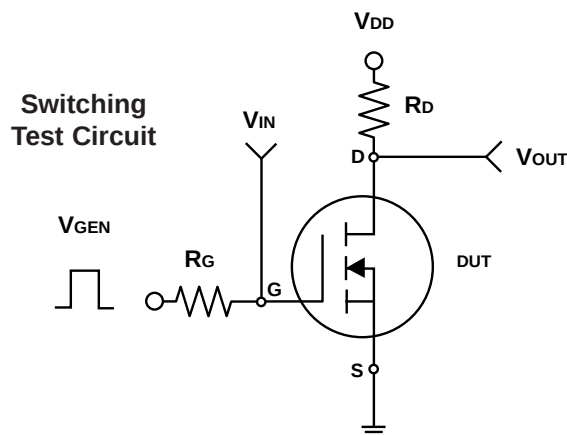
Dynamic

Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =5.0V, I _D =20A	–	16	22	nC
Gate-Source Charge	Q _{gs}	V _{DS} = 15V, V _{GS} = 10V I _D = 20A	–	34	48	
Gate-Drain Charge	Q _{gd}		–	5.7	–	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, R _L = 15Ω I _D ≅ 1A, V _{GEN} = 10V R _G = 6Ω	–	4.7	–	ns
Rise Time	t _r		–	10	20	
Turn-Off Delay Time	t _{d(off)}		–	9	18	
Fall Time	t _f		–	47	75	
Input Capacitance	C _{iss}	V _{GS} = 0V	–	13	26	pF
Output Capacitance	C _{oss}	V _{DS} = 15V	–	1850	–	
Reverse Transfer Capacitance	C _{rss}	f = 1.0MHz	–	315	–	

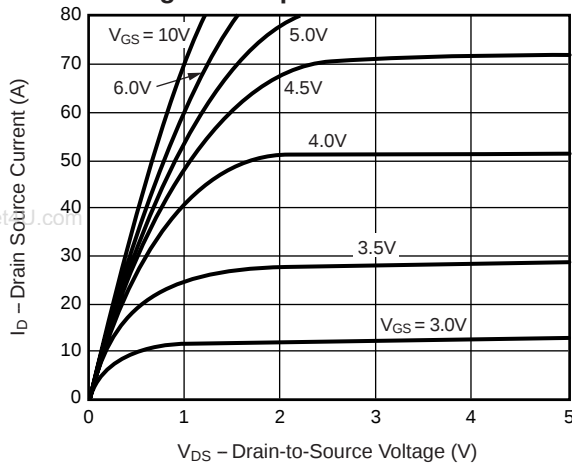
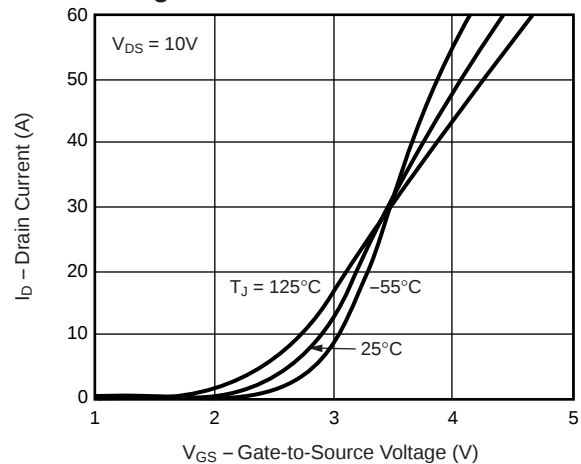
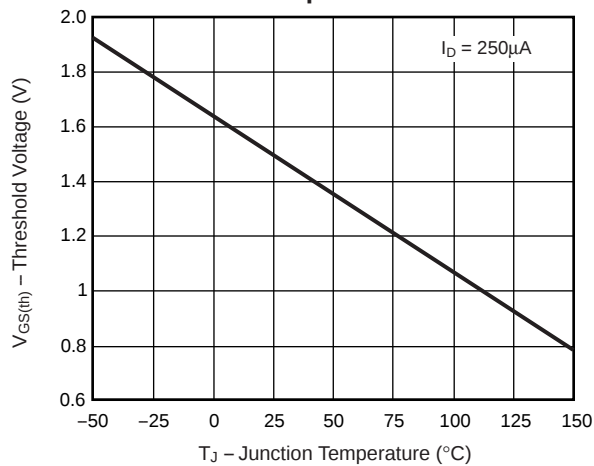
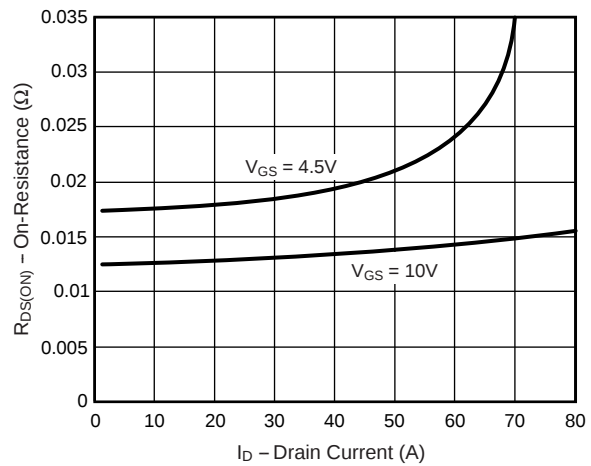
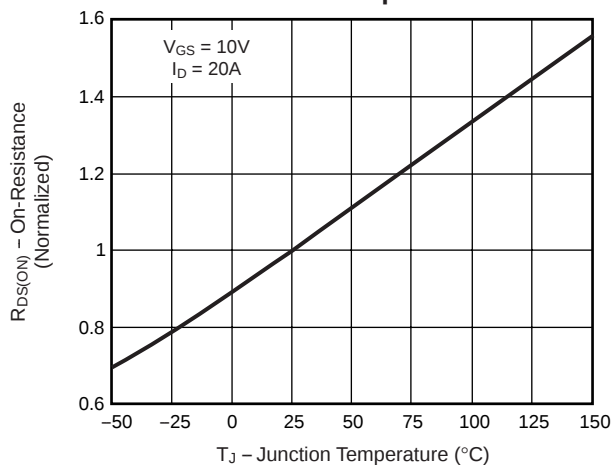
Source-Drain Diode

Max Diode Forward Current	I _S	–	–	–	20	A
Diode Forward Voltage ⁽¹⁾	V _{SD}	I _S = 20A, V _{GS} = 0V	–	0.91	1.3	V

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



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


Ratings and Characteristic Curves

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

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

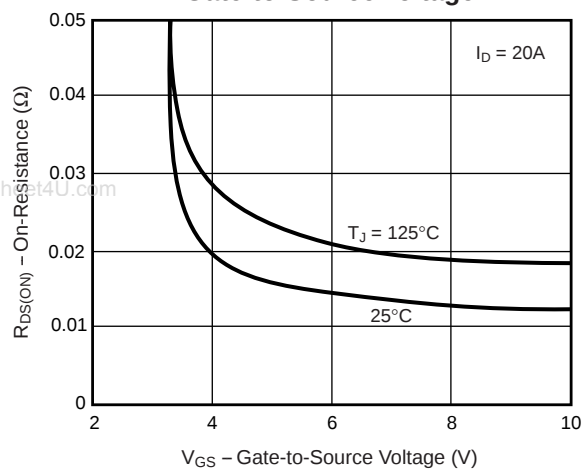


Fig. 7 – Gate Charge

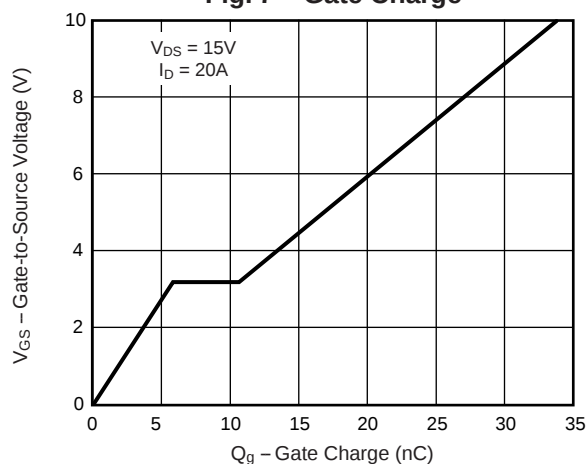


Fig. 8 – Capacitance

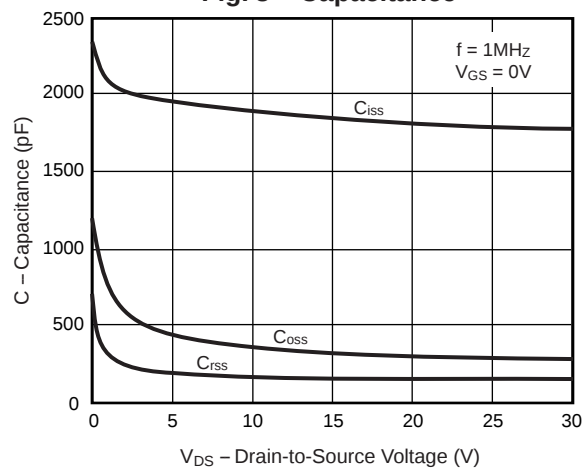
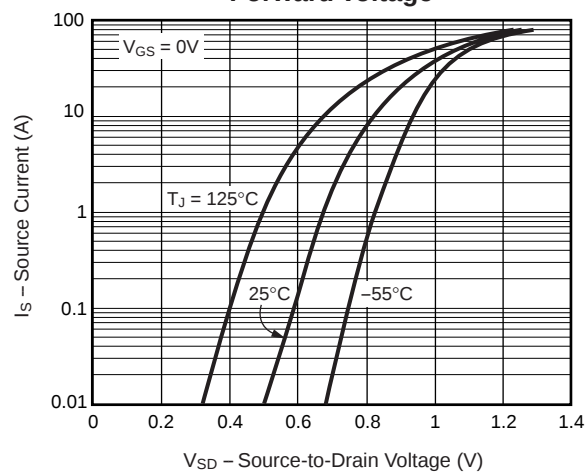


Fig. 9 – Source-Drain Diode Forward Voltage



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

Fig. 10 – Transient Thermal Impedance

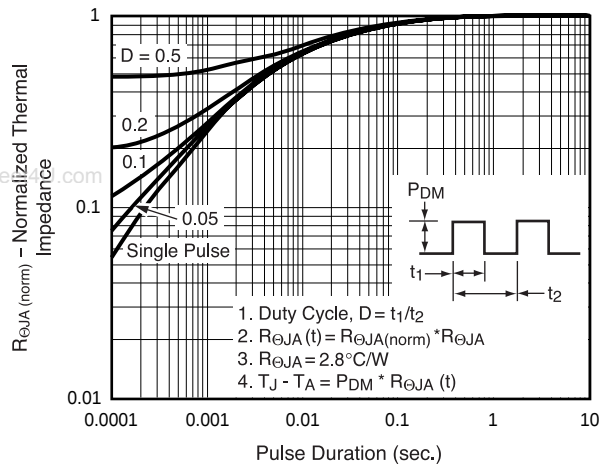


Fig. 11 – Power vs. Pulse Duration

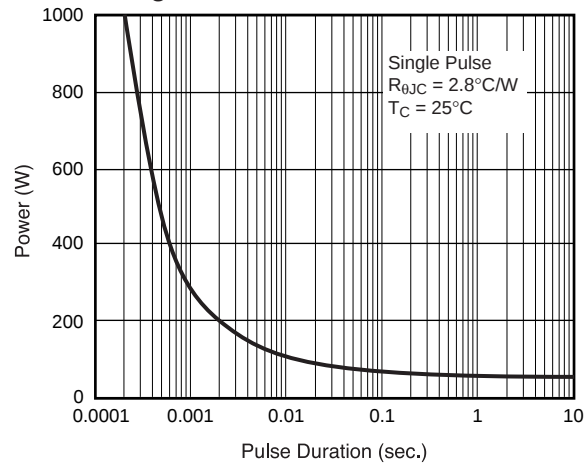


Fig. 12 – Maximum Safe Operating Area

