

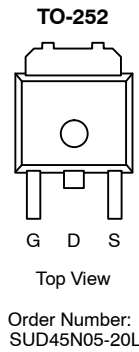


## N-Channel 50-V (D-S), 175°C MOSFET, Logic Level

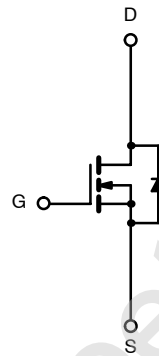
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A) <sup>a</sup>
50	0.018 @ V <sub>GS</sub> = 10 V	30
	0.020 @ V <sub>GS</sub> = 4.5 V	30

### FEATURES

- TrenchFET® Power MOSFET
- 175°C Maximum Junction Temperature
- 100% R<sub>g</sub> Tested



Drain Connected to Tab



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T <sub>C</sub> = 25°C UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	50	V
Gate-Source Voltage	V <sub>GS</sub>	± 20	
Continuous Drain Current <sup>a</sup>	I <sub>D</sub>	T <sub>C</sub> = 25°C	A
		T <sub>C</sub> = 100°C	
Pulsed Drain Current	I <sub>DM</sub>	100	
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	43	
Avalanche Current	I <sub>AR</sub>	37	
Repetitive Avalanche Energy (Duty Cycle ≤ 1%)	L = 0.1 mH E <sub>AR</sub>	93	
Maximum Power Dissipation	P <sub>D</sub>	T <sub>C</sub> = 25°C	W
		T <sub>A</sub> = 25°C	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 175	°C

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Limit	Unit
Maximum Junction-to-Ambient	R <sub>thJA</sub>	Free Air, FR4 Board Mount	°C/W
		Free Air, Vertical Mount	
Maximum Junction-to-Case	R <sub>thJC</sub>	2.0	

Notes

- a. Package limited.
- b. Surface Mounted on FR4 Board, t ≤ 10 sec.

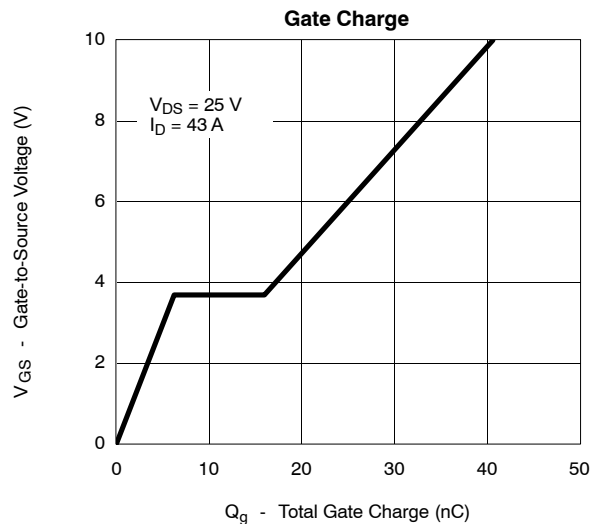
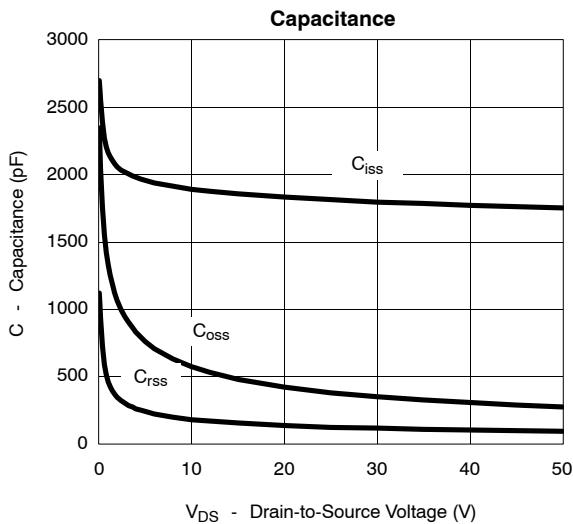
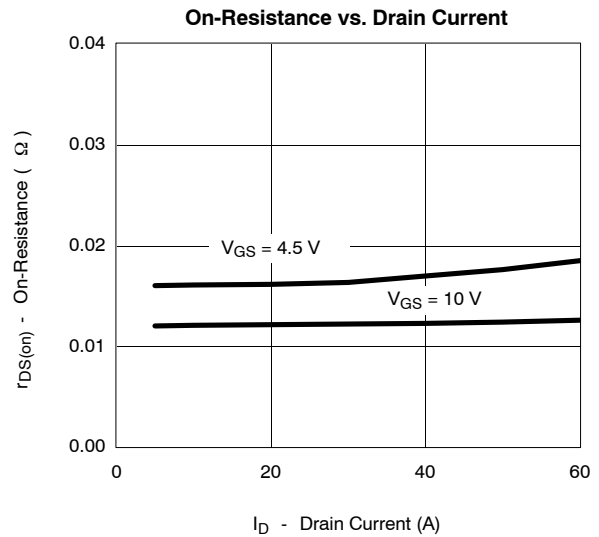
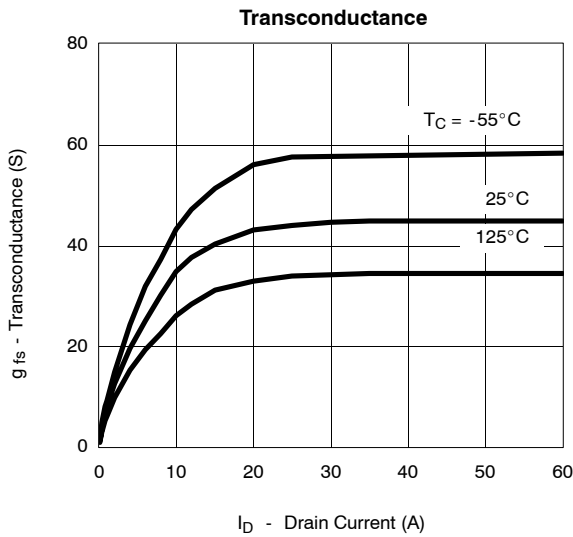
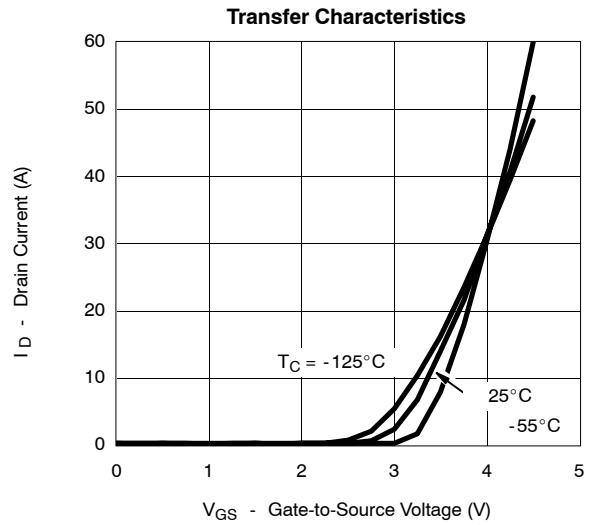
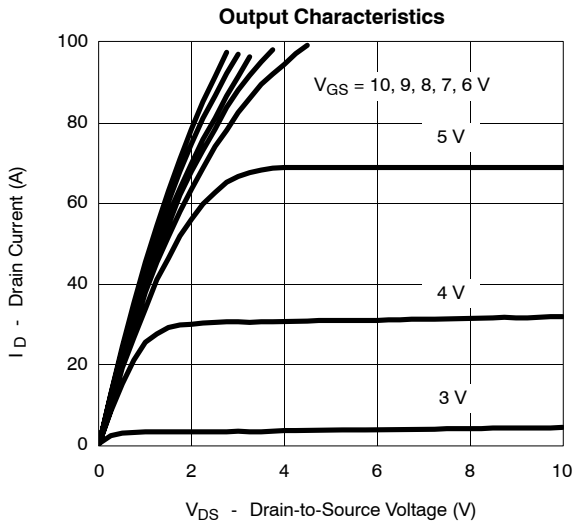
For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	50			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	1.0	2.0		
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125 °C			50	
		V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 175 °C			150	
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	43			A
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 20 A			0.018	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 20 A, T <sub>J</sub> = 125 °C			0.036	
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 43 A, T <sub>J</sub> = 125 °C			0.040	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 43 A			0.020	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 43 A	20			S
<b>Dynamic<sup>a</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		1800	3600	pF
Output Capacitance	C <sub>oss</sub>			370		
Reverse Transfer Capacitance	C <sub>rss</sub>			130		
Total Gate Charge <sup>c</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 43 A		43	60	nC
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>			7		
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>			10		
Gate Resistance	R <sub>g</sub>		0.5		3.6	Ω
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 25 V, R <sub>L</sub> = 0.6 Ω I <sub>D</sub> ≅ 43 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 2.5 Ω		10	20	ns
Rise Time <sup>c</sup>	t <sub>r</sub>			10	20	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>			32	60	
Fall Time <sup>c</sup>	t <sub>f</sub>			7	15	
<b>Source-Drain Diode Ratings and Characteristic (T<sub>C</sub> = 25 °C)</b>						
Pulsed Current	I <sub>SM</sub>				43	A
Diode Forward Voltage <sup>b</sup>	V <sub>SD</sub>	I <sub>F</sub> = 43 A, V <sub>GS</sub> = 0 V			1.5	V
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 43 A, di/dt = 100 A/μs		49	100	ns

## Notes

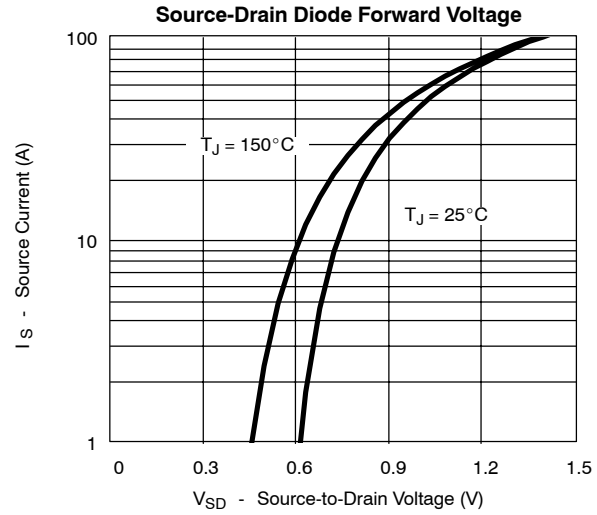
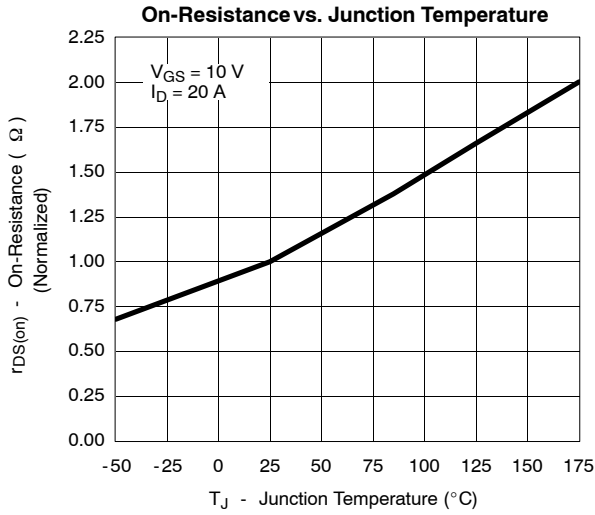
- Guaranteed by design, not subject to production testing.
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Independent of operating temperature.

**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

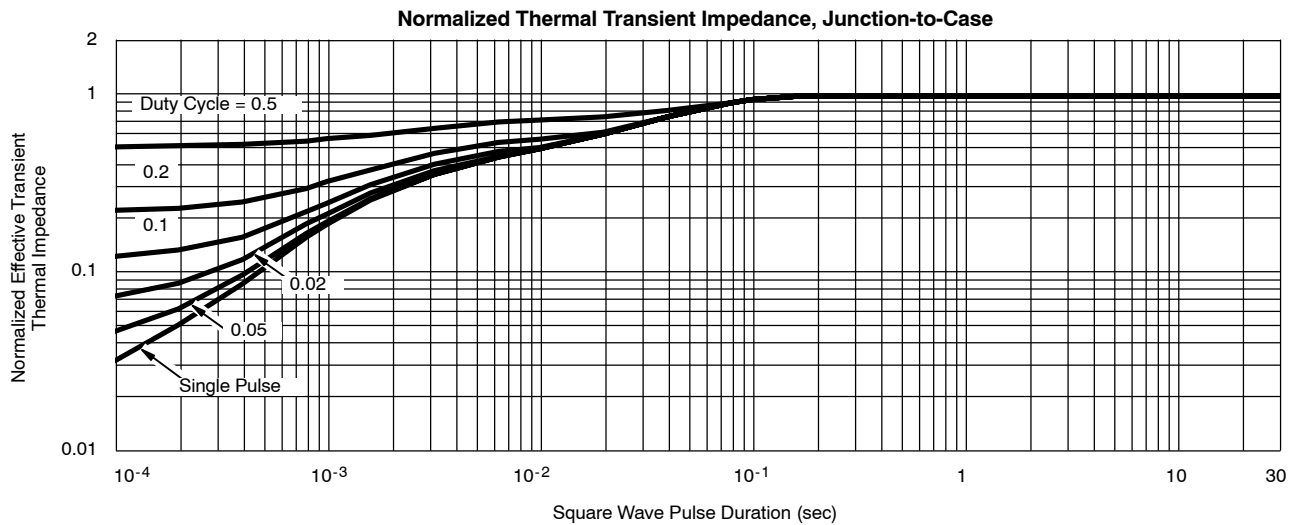
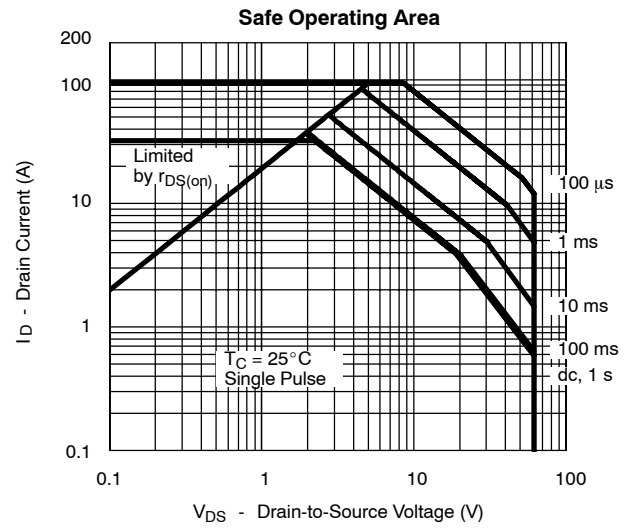
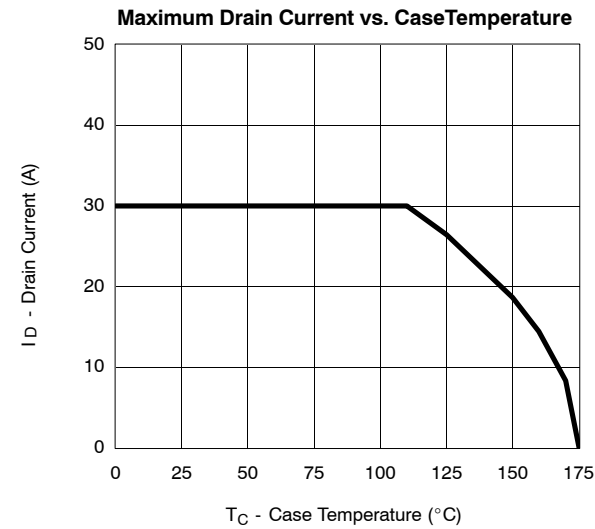




### TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



### THERMAL RATINGS





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