

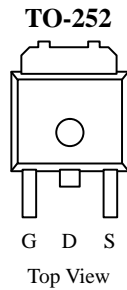


N-Channel 30-V (D-S), 175°C MOSFET

Product Summary

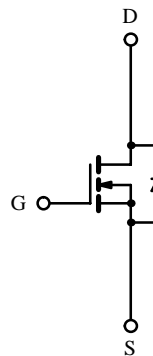
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
30	0.010 @ V _{GS} = 10 V	± 15
	0.019 @ V _{GS} = 4.5 V	± 12

175°C Rated
Maximum Junction Temperature
TrenchFET™
Power MOSFETs



Drain Connected to Tab

Order Number:
SUD50N03-10



N-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	30	V	
Gate-Source Voltage	V _{GS}	± 20		
Continuous Drain Current ^a	I _D	T _A = 25°C	A	
		T _A = 100°C		± 10
Pulsed Drain Current	I _{DM}	± 100		
Continuous Source Current (Diode Conduction) ^a	I _S	15		
Maximum Power Dissipation	P _D	T _C = 25°C	83	W
		T _A = 25°C	4 ^a	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 175	°C	

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	R _{thJA}		30	°C/W
Maximum Junction-to-Case	R _{thJC}		1.8	

Notes

a. Surface Mounted on FR4 Board, t ≤ 10 sec.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70265.



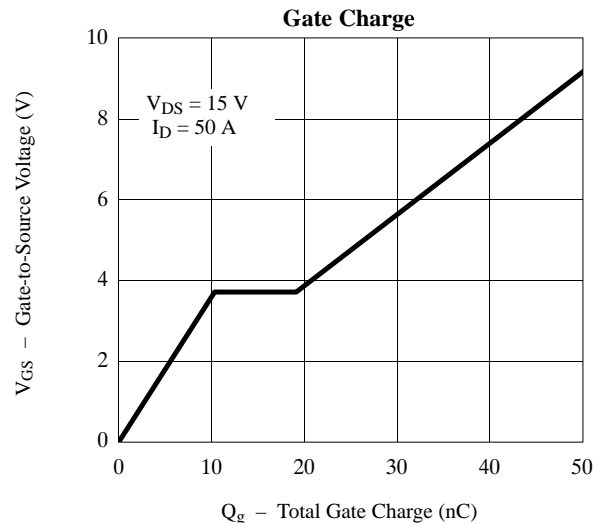
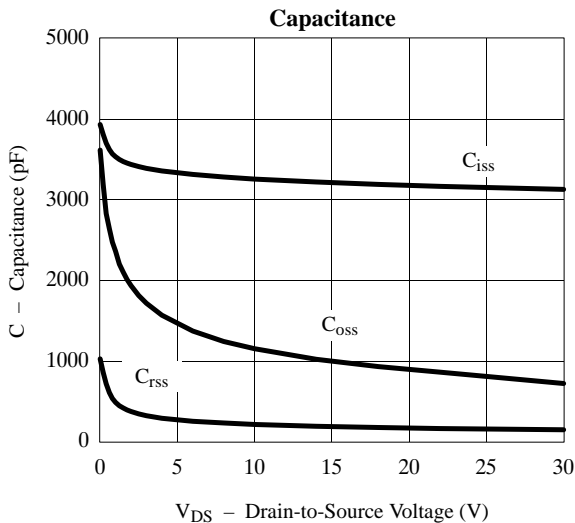
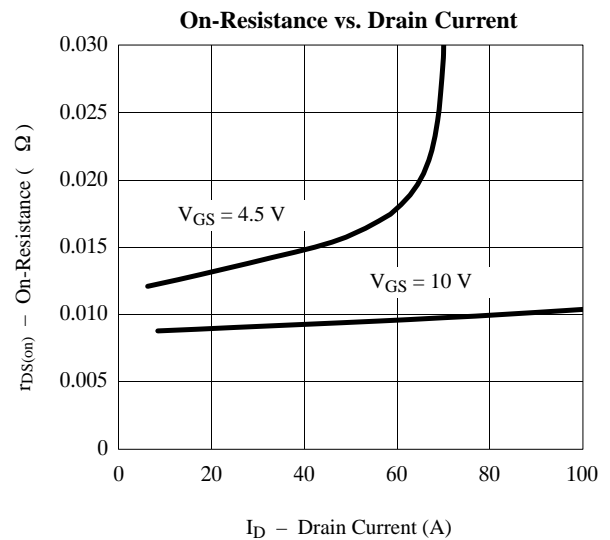
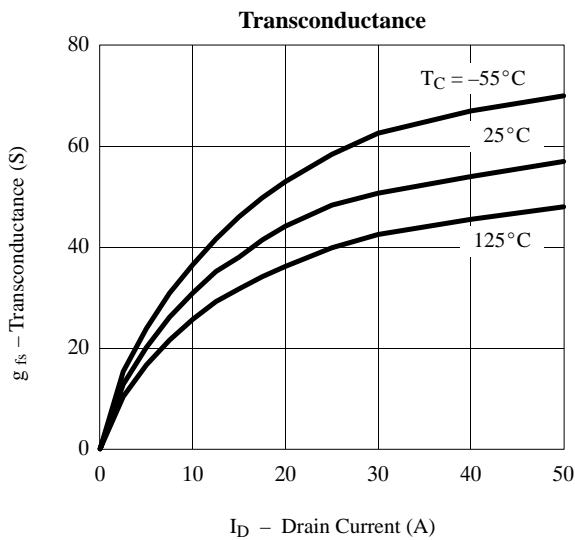
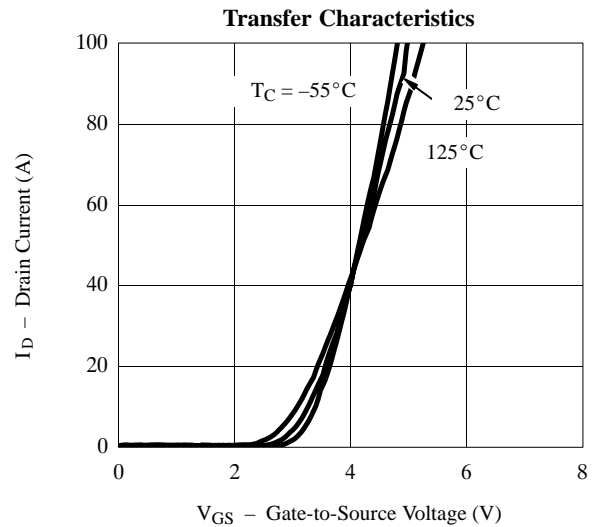
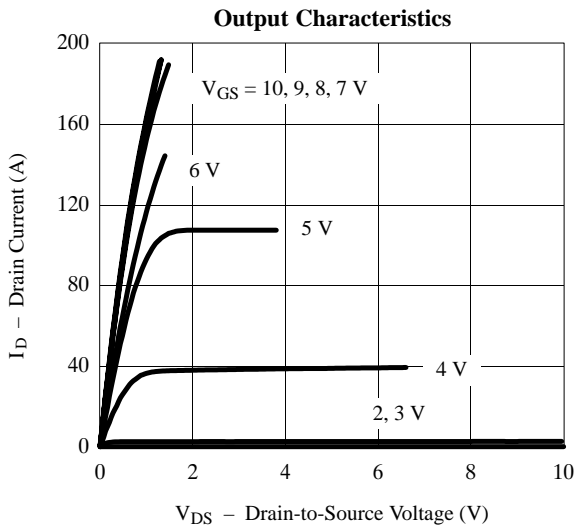
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	1.0	2.0		
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			50	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{ V}$	50			A
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$			0.010	Ω
		$V_{GS} = 10\text{ V}, I_D = 15\text{ A}, T_J = 125^\circ\text{C}$			0.018	
		$V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$			0.019	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 15\text{ A}$	20			S
Dynamic^a						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, F = 1\text{ MHz}$		3200	6000	pF
Output Capacitance	C_{oss}			800		
Reverse Transfer Capacitance	C_{rss}			150		
Total Gate Charge ^c	Q_g	$V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 50\text{ A}$		55	100	nC
Gate-Source Charge ^c	Q_{gs}			10		
Gate-Drain Charge ^c	Q_{gd}			9		
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 15\text{ V}, R_L = 0.3\ \Omega$ $I_D \cong 50\text{ A}, V_{GEN} = 10\text{ V}, R_G = 2.5\ \Omega$		16	30	ns
Rise Time ^c	t_r			8	20	
Turn-Off Delay Time ^c	$t_{d(off)}$			33	60	
Fall Time ^c	t_f			20	40	
Source-Drain Diode Ratings and Characteristic ($T_C = 25^\circ\text{C}$)						
Pulsed Current	I_{SM}				100	A
Diode Forward Voltage ^b	V_{SD}	$I_F = 100\text{ A}, V_{GS} = 0\text{ V}$		1.2	1.5	V
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 50\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		55	100	ns

Notes

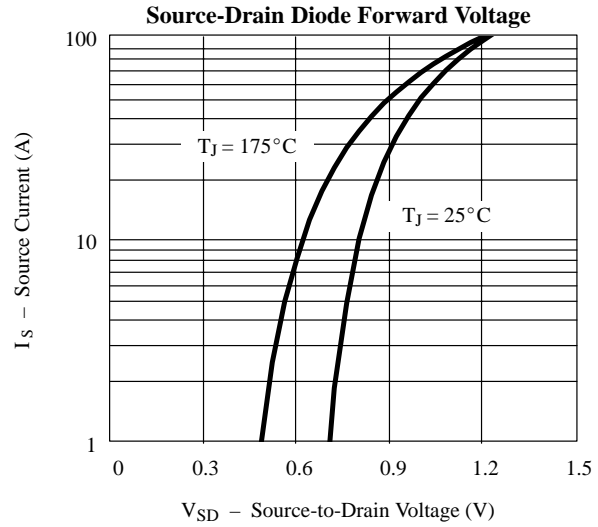
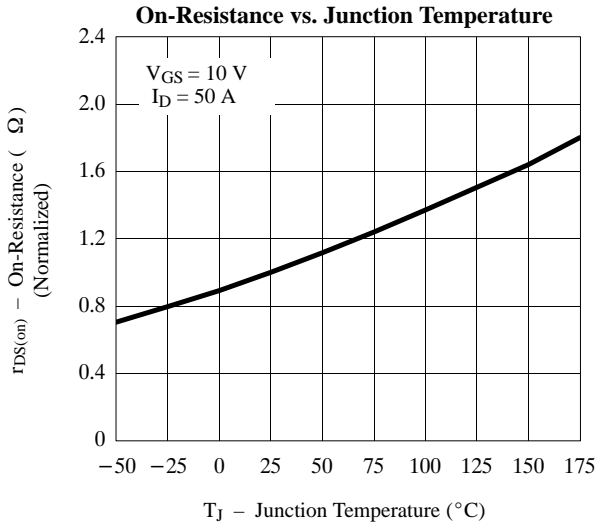
- a. Guaranteed by design, not subject to production testing.
- b. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- c. Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)

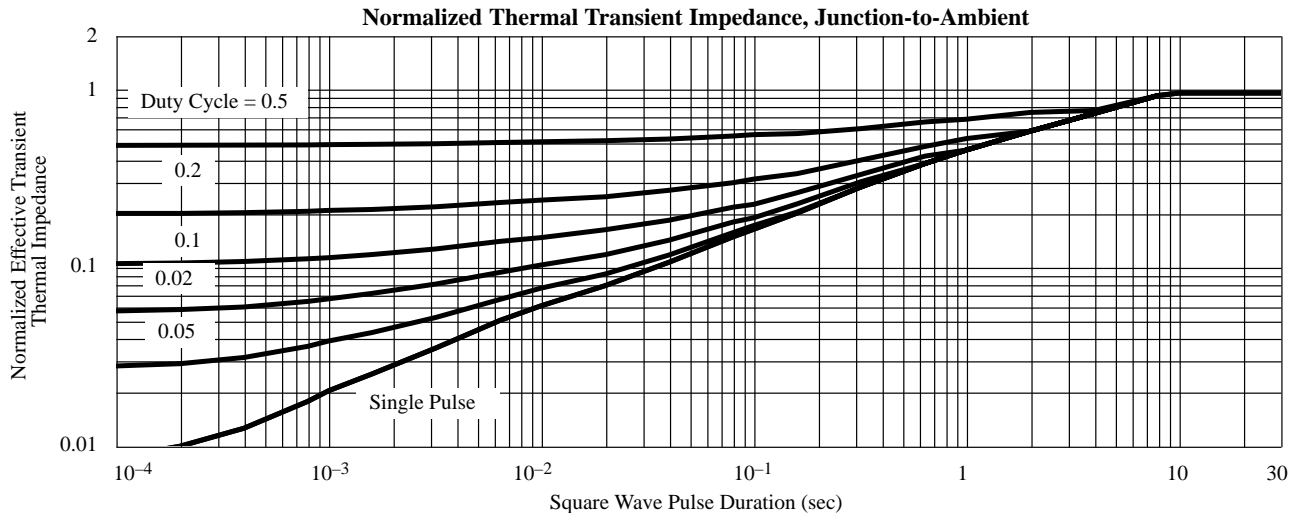
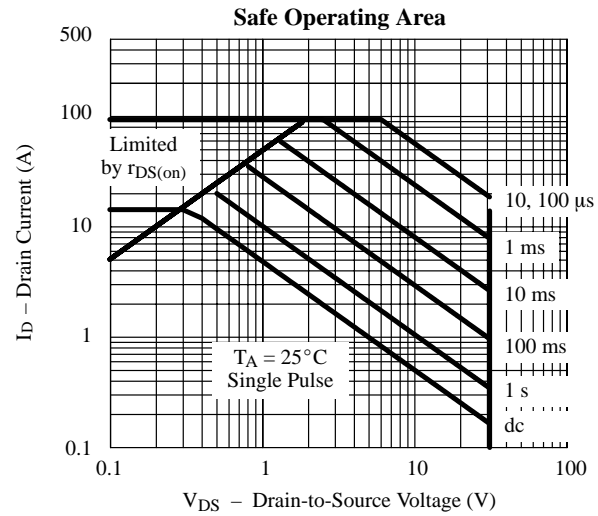
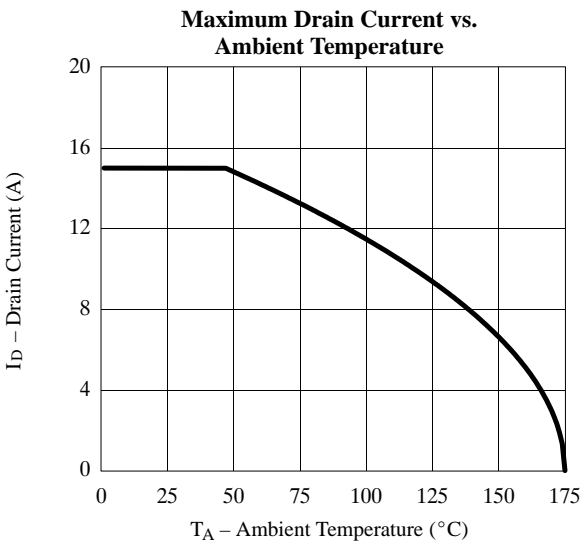




Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings





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