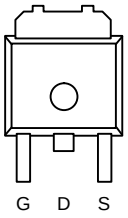
P-Channel 60-V (D-S), 175°C MOSFET, Logic Level

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
–60	0.170 @ V_{GS} = –10 V	–10
	0.280 @ V_{GS} = –4.5 V	–8

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

TO-252

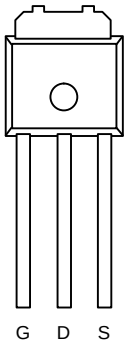


Top View

Order Number:
SUD10P06-280L

Drain Connected to Tab

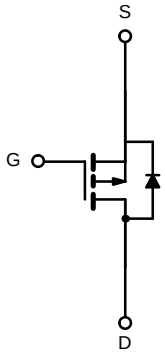
TO-251



Top View

Order Number:
SUU10P06-280L

and DRAIN-TAB



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C UNLESS OTHERWISE NOTED)				
Parameter		**Symbol**	**Limit**	**Unit**
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current (T_J = 150°C)	T_C = 25°C	I_D	–10	A
	T_C = 100°C		–7	
Pulsed Drain Current		I_{DM}	–20	
Continuous Source Current (Diode Conduction)		I_S	–10	
Avalanche Current		I_{AR}	–10	
Repetitive Avalanche Energy (Duty Cycle ≤ 1%)	L = 0.1 mH	E_{AR}	5	mJ
Maximum Power Dissipation	T_C = 25°C	P_D	37	W
	T_A = 25°C		2[a]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 175	°C

THERMAL RESISTANCE RATINGS					
Parameter		**Symbol**	**Typical**	**Maximum**	**Unit**
Junction-to-Ambient[a]	FR4 Board Mount	R_{thJA}	60	70	°C/W
	Free Air		120	140	
Junction-to-Case		R_{thJC}	3.7	4.0	

Notes
a. Surface Mounted on FR4 Board.

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

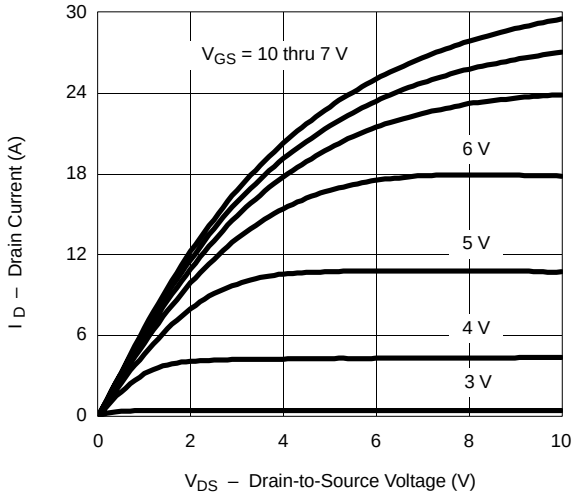
SPECIFICATIONS (T_J =25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ[a]	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{DS} = 0 V, I_D = –250 μA	–60			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = –250 μA	–1.0	–2.0	–3.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = –60 V, V_{GS} = 0 V			–1	μA
		V_{DS} = –60 V, V_{GS} = 0 V, T_J = 125°C			–50	
		V_{DS} = –60 V, V_{GS} = 0 V, T_J = 175°C			–150	
On-State Drain Current[b]	$I_{D(on)}$	V_{DS} = –5 V, V_{GS} = –10 V	–10			A
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = –10 V, I_D = –5 A		0.130	0.170	Ω
		V_{GS} = –10 V, I_D = –5 A, T_J = 125°C			0.31	
		V_{GS} = –10 V, I_D = –5 A, T_J = 175°C			0.375	
		V_{GS} = –4.5 V, I_D = –2 A		0.210	0.280	
Forward Transconductance[b]	g_{fs}	V_{DS} = –15 V, I_D = –5 A		6		S
Dynamic						
Input Capacitance	C_{iss}	V_{DS} = –25 V, V_{GS} = 0 V, f = 1 MHz		635		pF
Output Capacitance	C_{oss}			100		
Reverse Transfer Capacitance	C_{rss}			30		
Total Gate Charge	Q_g	V_{DS} = –30 V, V_{GS} = –10 V, I_D = –10 A		11.5	25	nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			2		
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = –30 V, R_L = 3 Ω I_D ≃ 10 A, V_{GEN} = –10 V, R_G = 2.5 Ω		9	20	ns
Rise Time[c]	t_r			16	20	
Turn-Off Delay Time[c]	$t_{d(off)}$			17	30	
Fall Time[c]	t_f			19	35	
Source-Drain Diode Ratings and Characteristics (T_C = 25°C)[a]						
Pulsed Current	I_{SM}				–20	A
Forward Voltage[b]	V_{SD}	I_F = 10 A, V_{GS} = 0 V			–1.3	V
Reverse Recovery Time	t_{rr}	I_F = 10 A, di/dt = 100 A/μs		50	80	ns

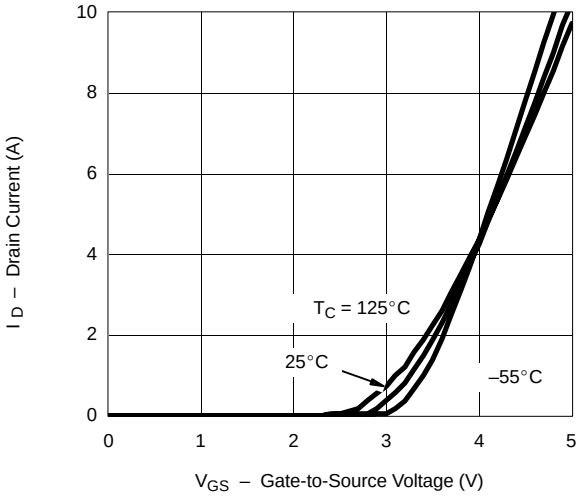
Notes:
a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
c. Independent of operating temperature.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

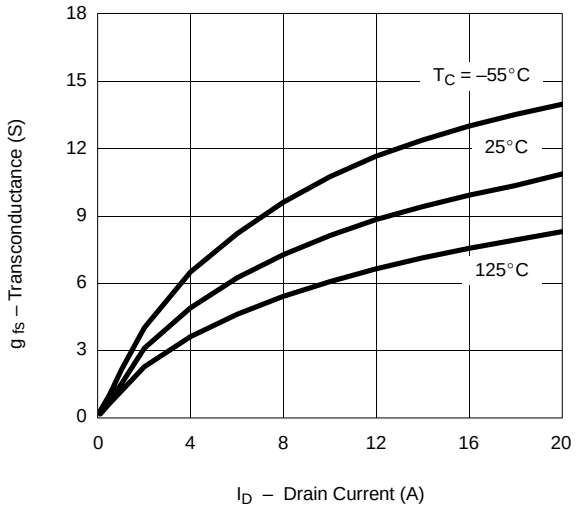
Output Characteristics



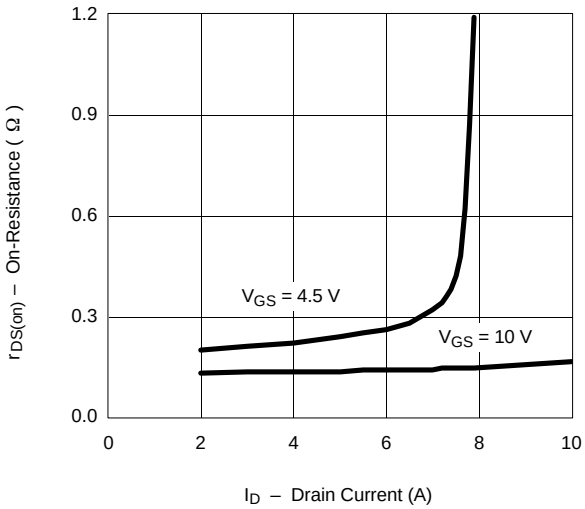
Transfer Characteristics



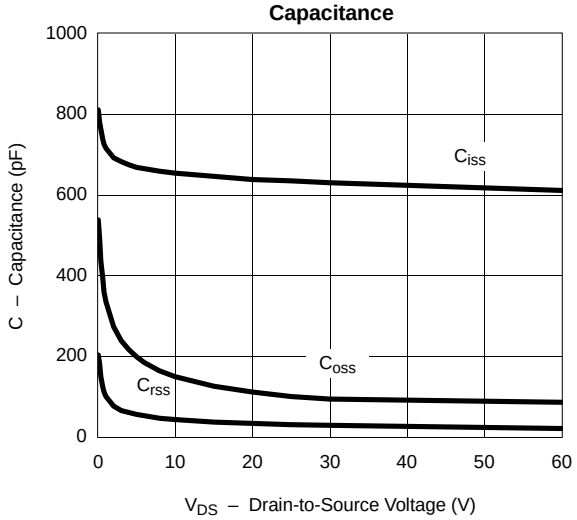
Transconductance



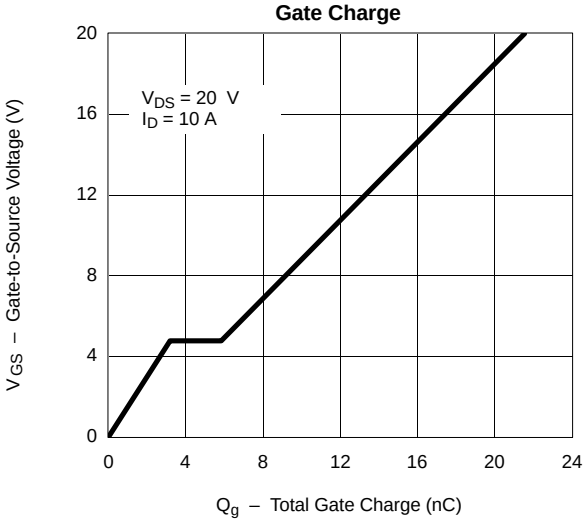
On-Resistance vs. Drain Current



Capacitance

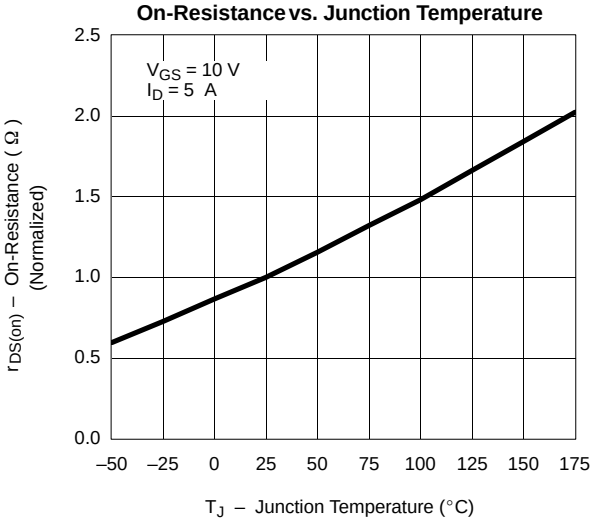


Gate Charge

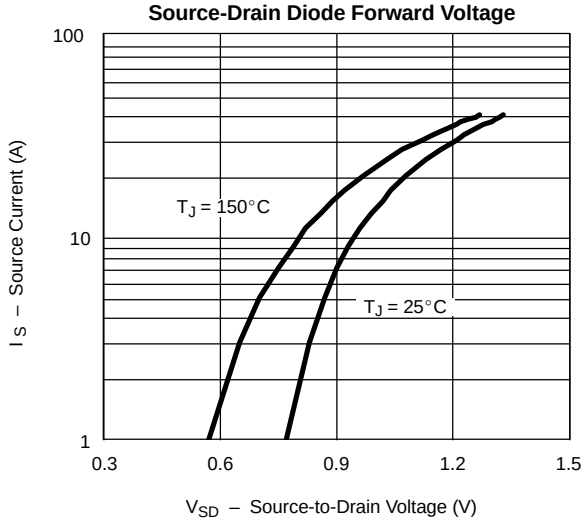


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

On-Resistance vs. Junction Temperature

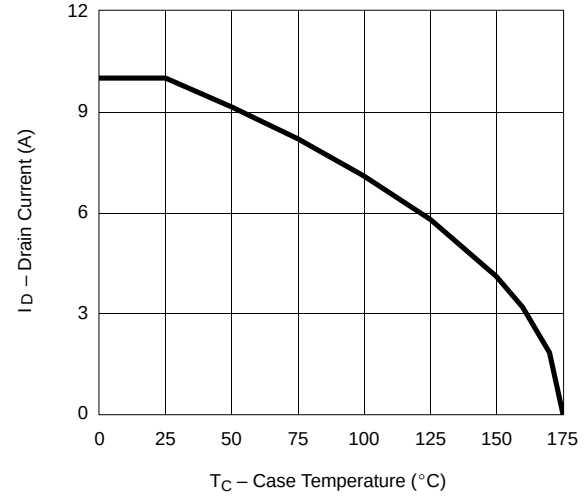


Source-Drain Diode Forward Voltage

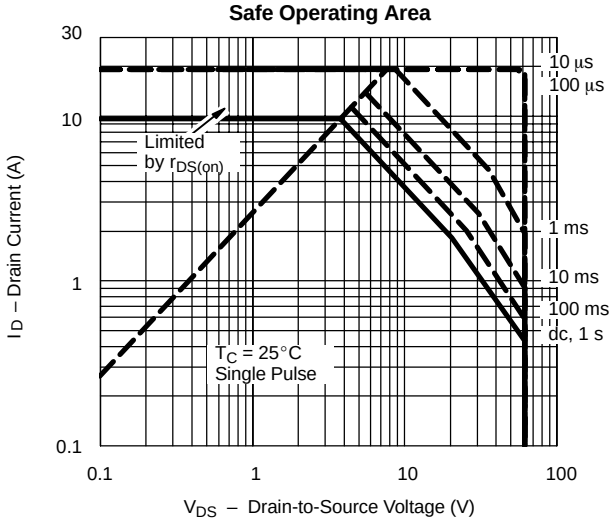


THERMAL RATINGS

Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case