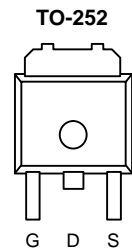




## P-Channel 30-V (D-S), 150°C MOSFET

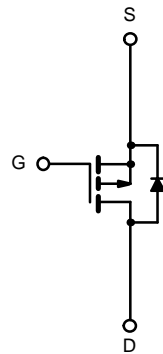
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A) <sup>a</sup>
-30	0.010 @ $V_{GS} = -10$ V	-15
	0.018 @ $V_{GS} = -4.5$ V	-12

**TrenchFET<sup>®</sup>**  
Power MOSFETs



Top View

Order Number:  
SUD45P03-10



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>b</sup>	$I_D$	$T_A = 25^\circ\text{C}$	-15
		$T_A = 100^\circ\text{C}$	-8
Pulsed Drain Current	$I_{DM}$	-100	A
Continuous Source Current (Diode Conduction)	$I_S$	-15	
Maximum Power Dissipation <sup>b</sup>	$P_D$	$T_C = 25^\circ\text{C}$	70
		$T_A = 25^\circ\text{C}$	4 <sup>b</sup>
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>b</sup>	$R_{thJA}$		30	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{thJC}$		1.8	

Notes

- a. Calculated Rating for  $T_A = 25^\circ\text{C}$ , for comparison purposes only. This cannot be used as continuous rating (see Absolute Maximum Ratings and Typical Characteristics).
- b. Surface Mounted on FR4 Board,  $t \leq 10$  sec.



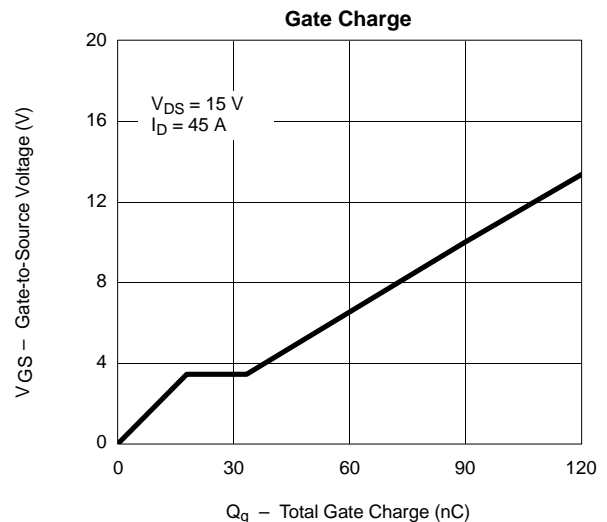
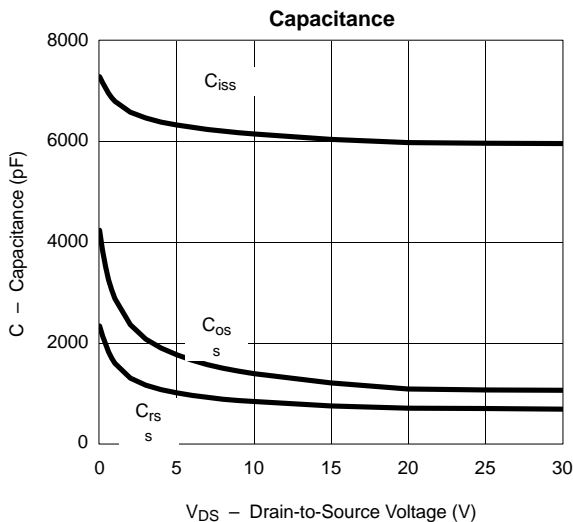
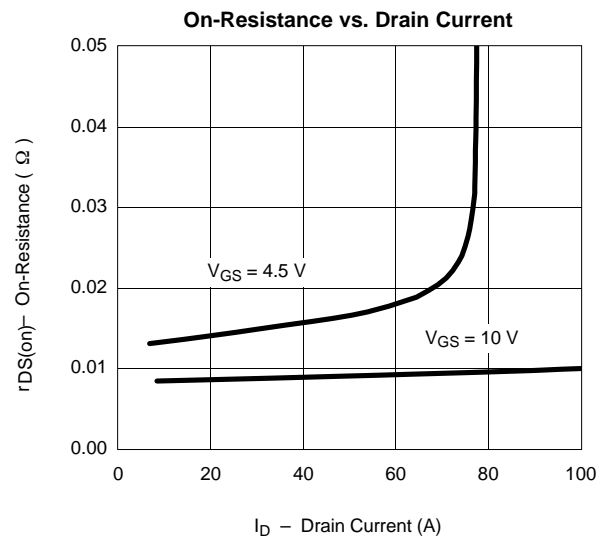
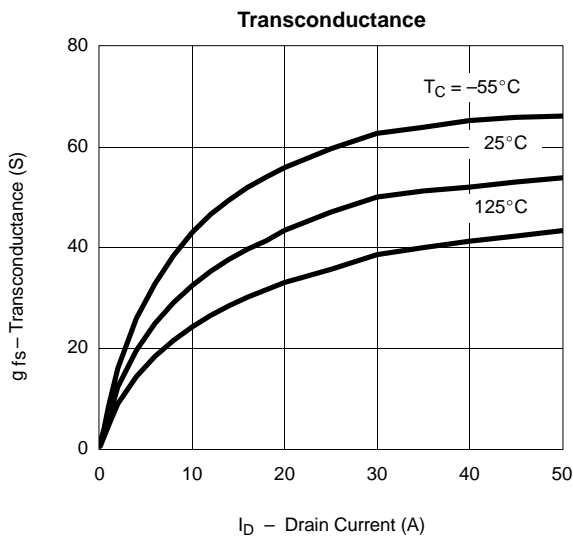
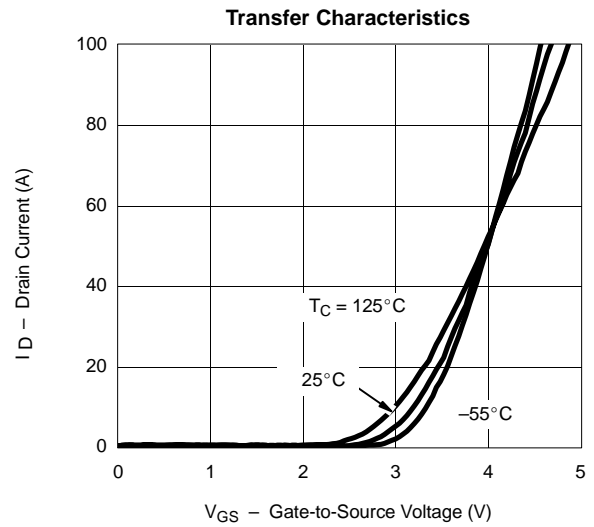
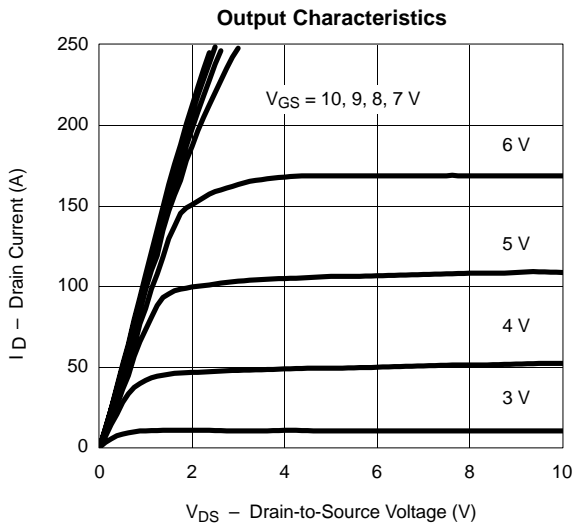
SPECIFICATIONS ( $T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-1.0			
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			-50	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} = -5\text{ V}, V_{GS} = -10\text{ V}$	-50			A
		$V_{DS} = -5\text{ V}, V_{GS} = -4.5\text{ V}$	-20			
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -15\text{ A}$			0.010	$\Omega$
		$V_{GS} = -10\text{ V}, I_D = -15\text{ A}, T_J = 125^\circ\text{C}$			0.015	
		$V_{GS} = -4.5\text{ V}, I_D = -15\text{ A}$			0.018	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -15\text{ V}, I_D = -15\text{ A}$	20			S
<b>Dynamic<sup>b</sup></b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = -25\text{ V}, f = 1\text{ MHz}$		6000		pF
Output Capacitance	$C_{oss}$			1100		
Reverse Transfer Capacitance	$C_{rss}$			700		
Total Gate Charge <sup>c</sup>	$Q_g$	$V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}, I_D = -45\text{ A}$		90	150	nC
Gate-Source Charge <sup>c</sup>	$Q_{gs}$			20		
Gate-Drain Charge <sup>c</sup>	$Q_{gd}$			16		
Turn-On Delay Time <sup>c</sup>	$t_{d(on)}$	$V_{DD} = -15\text{ V}, R_L = 0.33\ \Omega$ $I_D \cong -45\text{ A}, V_{GEN} = -10\text{ V}, R_G = 2.4\ \Omega$		15	25	ns
Rise Time <sup>c</sup>	$t_r$			375	550	
Turn-Off Delay Time <sup>c</sup>	$t_{d(off)}$			100	200	
Fall Time <sup>c</sup>	$t_f$			140	250	
<b>Source-Drain Diode Ratings and Characteristic (<math>T_C = 25^\circ\text{C}</math>)</b>						
Pulsed Current	$I_{SM}$				100	A
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_F = -45\text{ A}, V_{GS} = 0\text{ V}$		1.0	1.5	V
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = -45\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		55	100	ns

## Notes

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

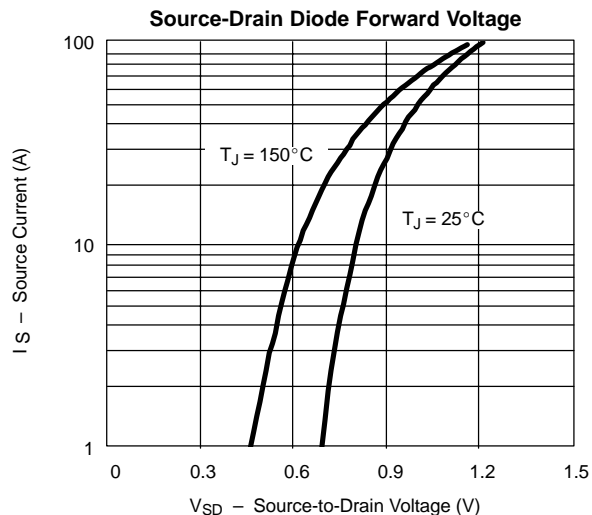
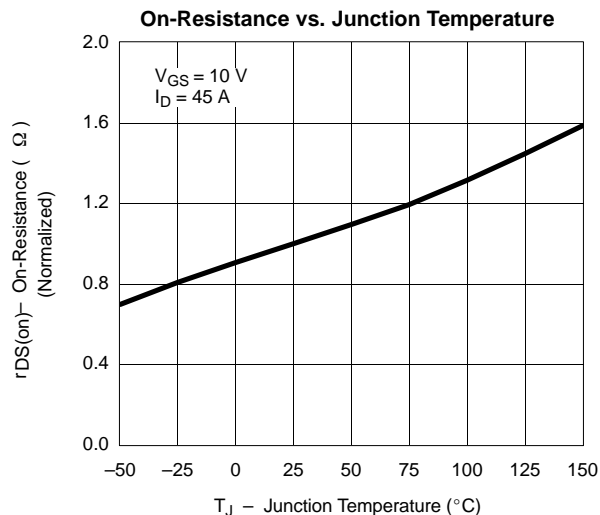


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

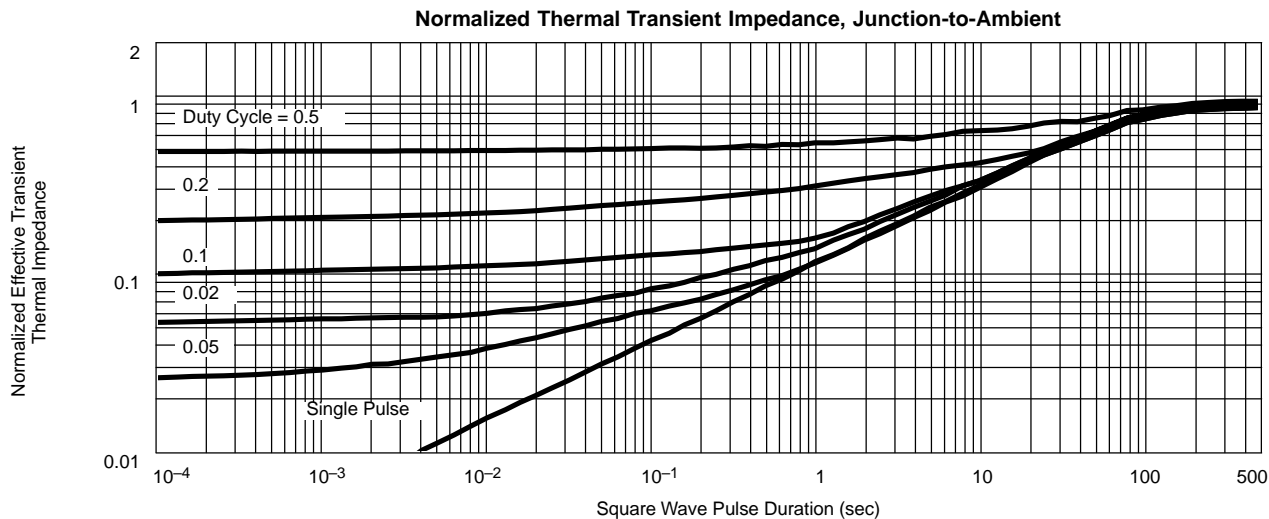
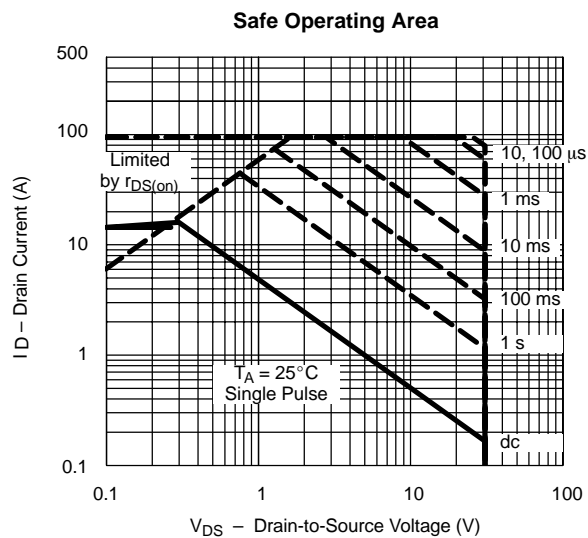
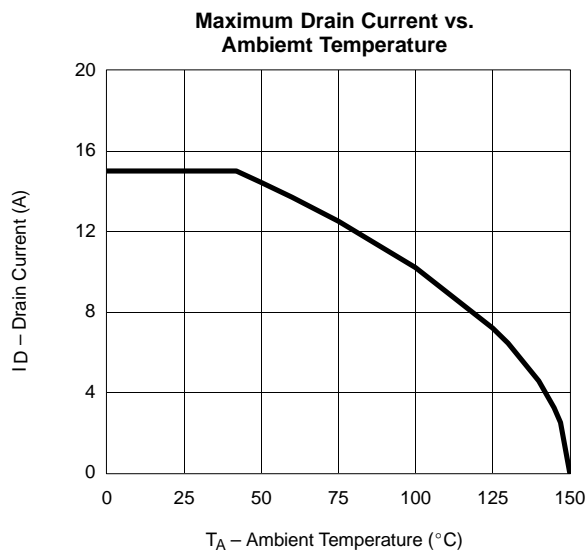




### TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



### THERMAL RATINGS





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