



P-Channel 8-V (D-S), 175°C MOSFET

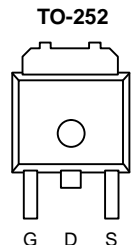
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-8	0.052 @ $V_{GS} = -4.5$ V	-15
	0.070 @ $V_{GS} = -2.5$ V	-13
	0.105 @ $V_{GS} = -1.8$ V	-10.5

FEATURES

- TrenchFET® Power MOSFET
- 175°C Junction Temperature
- Low Gate Threshold

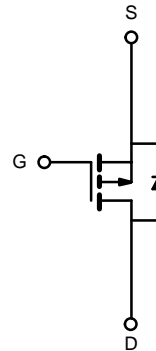
APPLICATIONS

- Pass Transistor for LDOs



Drain Connected to Tab

Order Number:
SUD15P01-52



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V_{DS}	-8	V	
Gate-Source Voltage	V_{GS}	± 8		
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	-15	A
		$T_C = 125^\circ\text{C}$	-8.7	
Pulsed Drain Current	I_{DM}	-25		
Avalanche Current	I_{AR}	-10		
Repetitive Avalanche Energy ^a	E_{AR}	L = 0.1 mH	5	mJ
Power Dissipation		$T_C = 25^\circ\text{C}$	21.4 ^{b, c}	W
	$T_A = 25^\circ\text{C}$	1.5 ^c		
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175	$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient ^b	R_{thJA}	$t \leq 10$ sec	40	50	$^\circ\text{C/W}$
		Steady State	80	100	
Junction-to-Case	R_{thJC}	5.6	7		

Notes:

- a. Duty cycle $\leq 1\%$.
- b. When mounted on 1" square PCB (FR-4 material).
- c. See SOA curve for voltage derating.

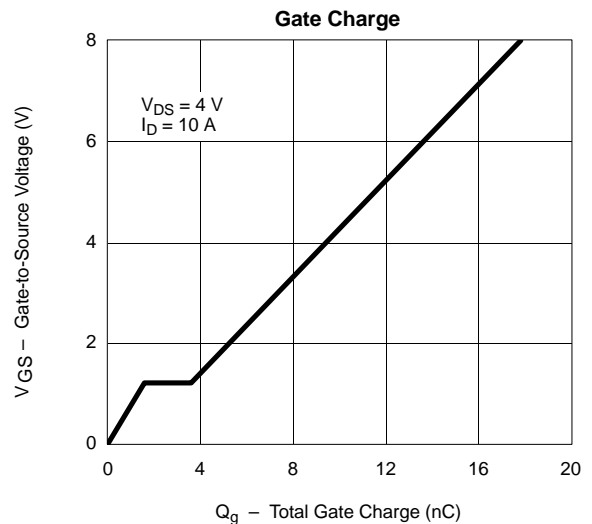
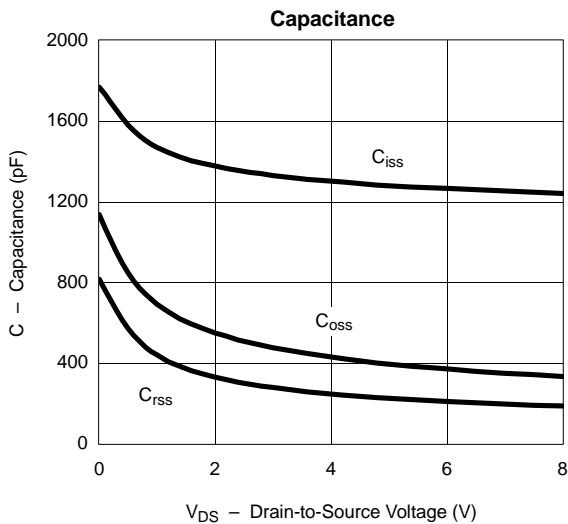
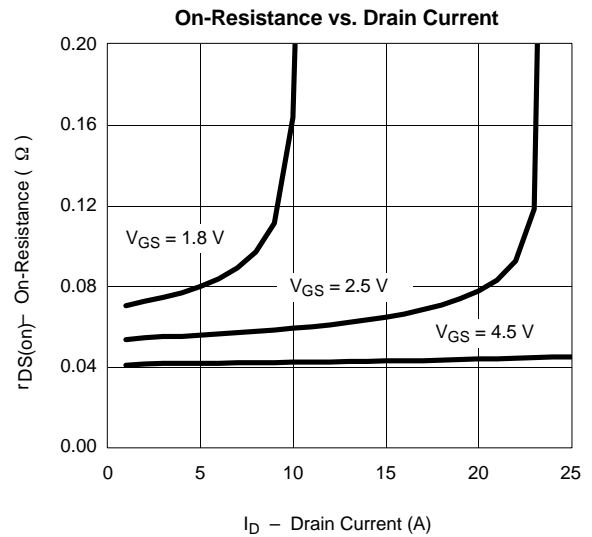
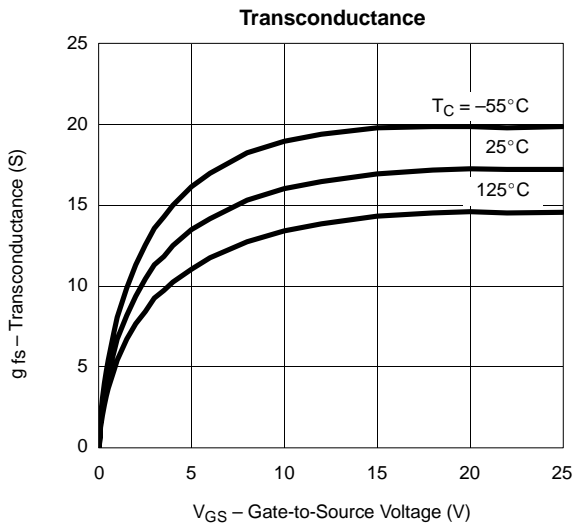
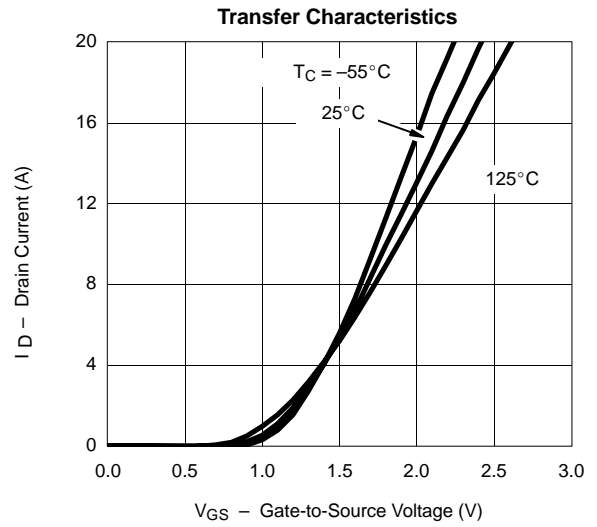
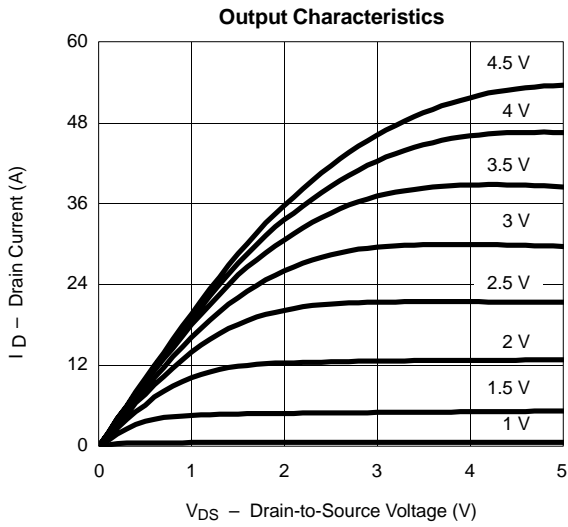
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-8			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-0.45		-0.8	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -6.4\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -6.4\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			-50	
		$V_{DS} = -6.4\text{ V}, V_{GS} = 0\text{ V}, T_J = 175^\circ\text{C}$			-150	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = -5\text{ V}, V_{GS} = -4.5\text{ V}$	-25			A
		$V_{DS} = -5\text{ V}, V_{GS} = -2.5\text{ V}$	-10			
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -10\text{ A}$		0.043	0.052	Ω
		$V_{GS} = -4.5\text{ V}, I_D = -13\text{ A}, T_J = 125^\circ\text{C}$			0.065	
		$V_{GS} = -4.5\text{ V}, I_D = -13\text{ A}, T_J = 175^\circ\text{C}$			0.075	
		$V_{GS} = -2.5\text{ V}, I_D = -5\text{ A}$			0.070	
		$V_{GS} = -1.8\text{ V}, I_D = -2\text{ A}$			0.105	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -5\text{ V}, I_D = -10\text{ A}$		16		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = -4\text{ V}, f = 1\text{ MHz}$		1300		pF
Output Capacitance	C_{oss}			430		
Reverse Transfer Capacitance	C_{rss}			245		
Total Gate Charge ^c	Q_g	$V_{DS} = -4\text{ V}, V_{GS} = -4.5\text{ V}, I_D = -10\text{ A}$		10.5	15	nC
Gate-Source Charge ^c	Q_{gs}			1.6		
Gate-Drain Charge ^c	Q_{gd}			2		
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = -4\text{ V}, R_L = 0.22\ \Omega$ $I_D = -15\text{ A}, V_{GEN} = -4.5\text{ V}, R_G = 2.5\ \Omega$		10	20	ns
Rise Time ^c	t_r			16	25	
Turn-Off Delay Time ^c	$t_{d(off)}$			30	45	
Fall Time ^c	t_f			25	40	
Source-Drain Diode Ratings and Characteristics ($T_C = 25^\circ\text{C}$)^b						
Continuous Current	I_S				-15	A
Pulsed Current	I_{SM}				-25	
Forward Voltage ^a	V_{SD}	$I_F = -15\text{ A}, V_{GS} = 0\text{ V}$			-1.5	V
Reverse Recovery Time	t_{rr}	$I_F = -15\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		45	75	ns

Notes:

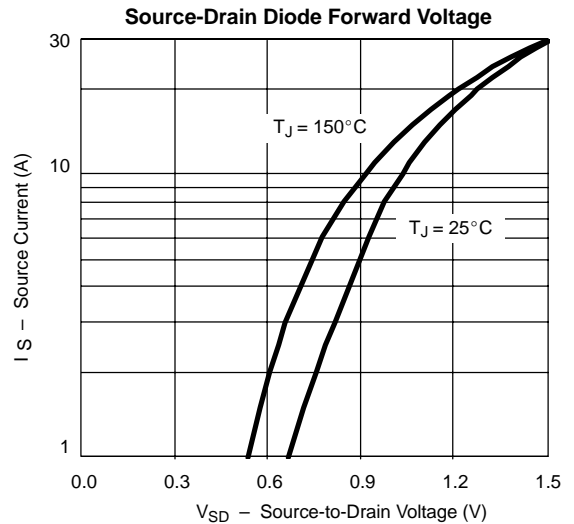
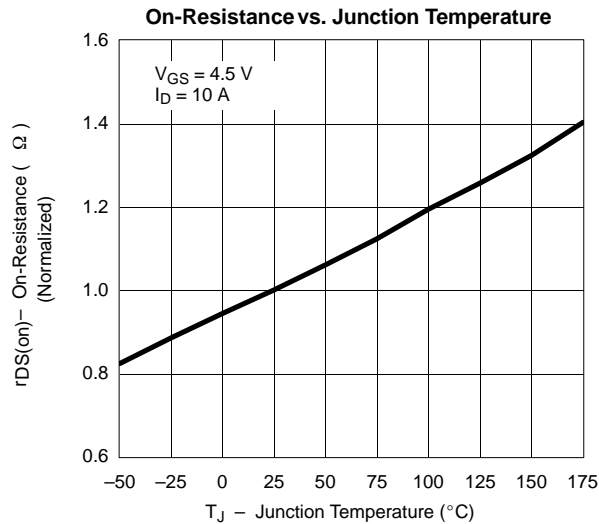
- Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.



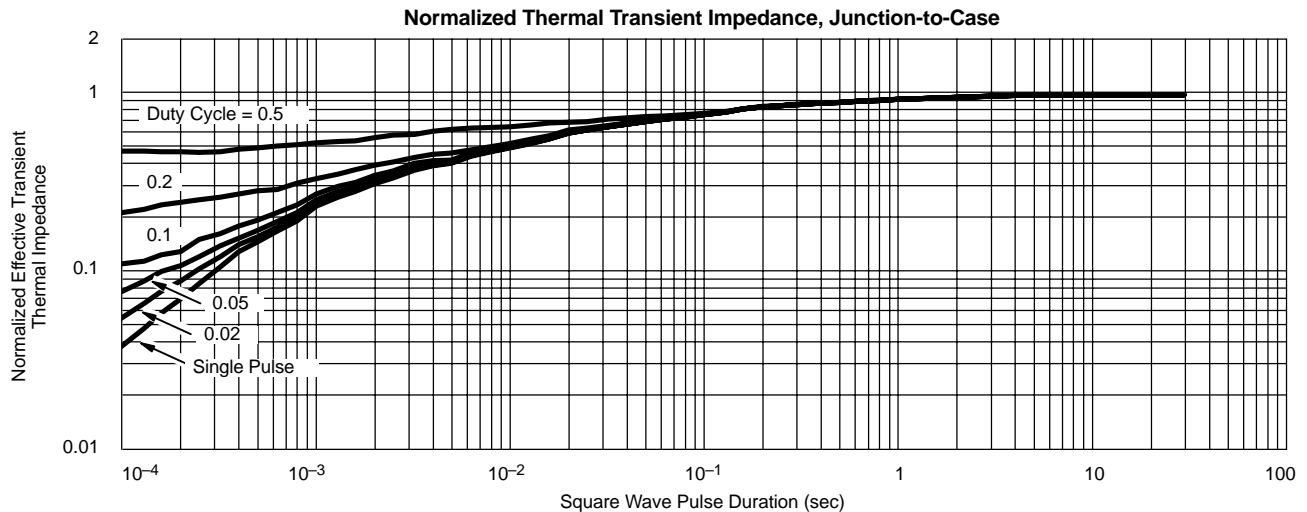
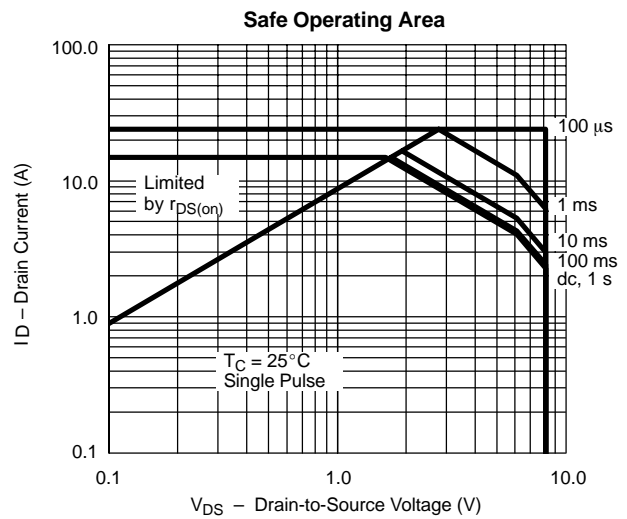
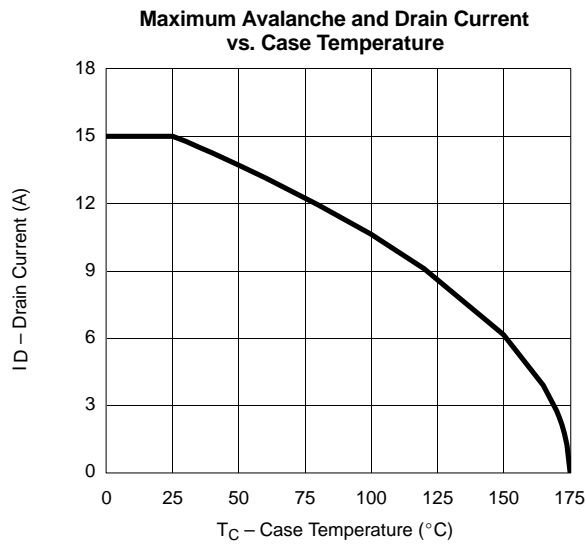
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



THERMAL RATINGS





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