

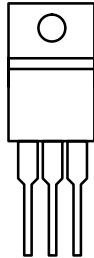


P-Channel 55-V (D-S), 175°C MOSFET

PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-55	0.008	-75 ^a

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

TO-220AB



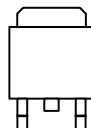
G D S

Top View

SUP75P05-08

DRAIN connected to TAB

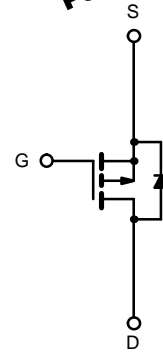
TO-263



G D S

Top View

SUB75P05-08



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-55	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	-75 ^a
		$T_C = 150^\circ\text{C}$	-47
Pulsed Drain Current	I_{DM}	-240	A
Avalanche Current	I_{AR}	-75	
Repetitive Avalanche Energy ^b	E_{AR}	$L = 0.1\text{ mH}$	280
Power Dissipation		$T_C = 25^\circ\text{C}$ (TO-220AB and TO-263)	250 ^d
	$T_A = 125^\circ\text{C}$ (TO-263) ^c	3.7	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Limit	Unit
Junction-to-Ambient	R_{thJA}	PCB Mount (TO-263) ^e	40
		Free Air (TO-220AB)	62.5
Junction-to-Case	R_{thJC}	0.6	$^\circ\text{C}/\text{W}$

Notes:

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

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



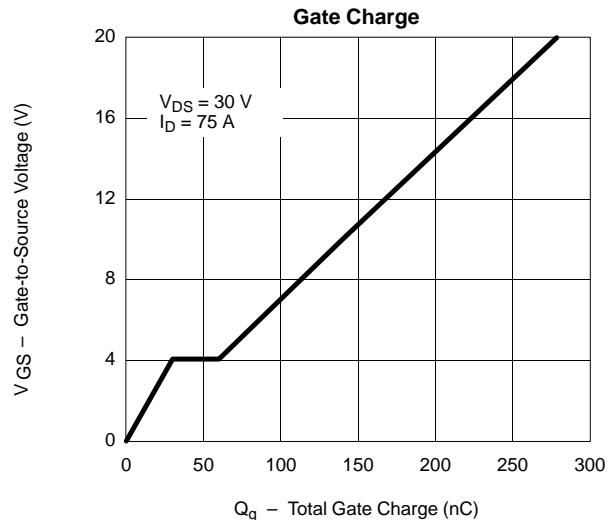
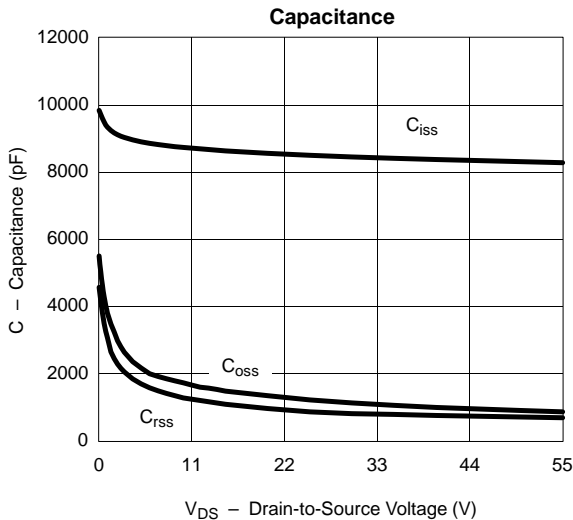
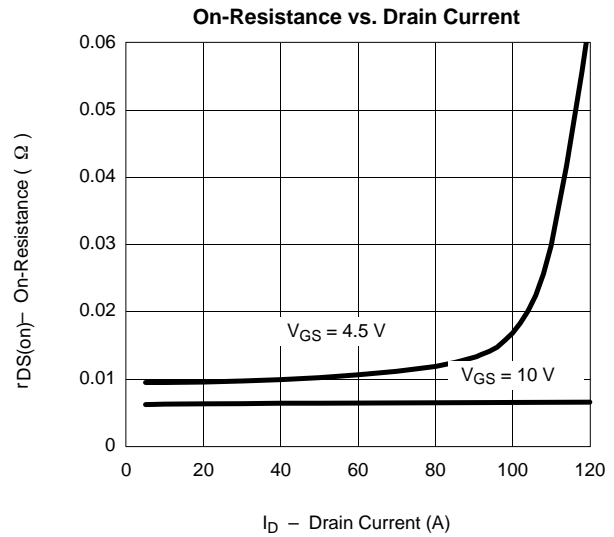
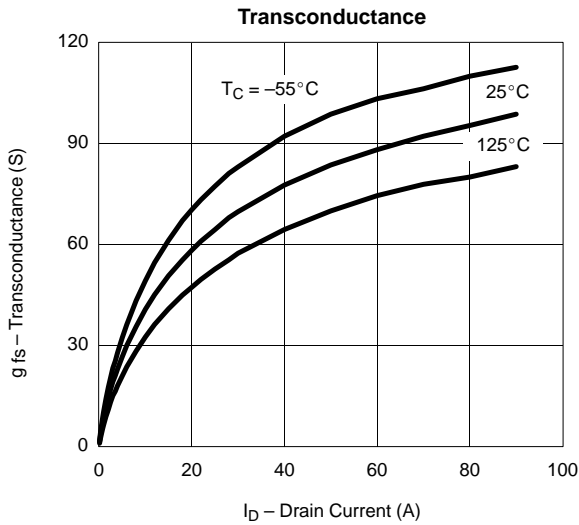
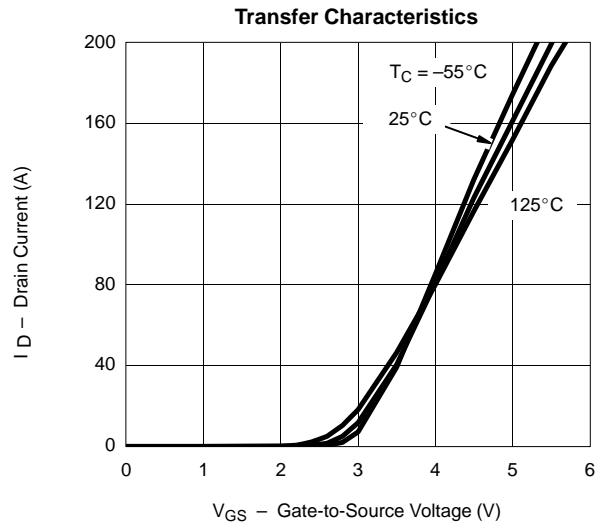
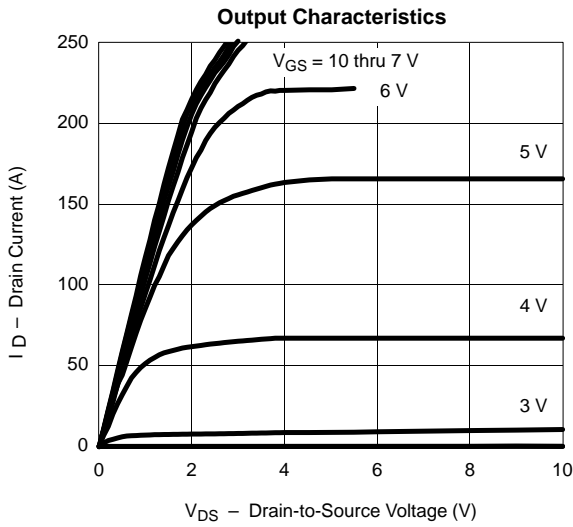
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = -250 μA	-55			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1	-2	-3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -44 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -44 V, V _{GS} = 0 V, T _J = 125 °C			-50	
		V _{DS} = -44 V, V _{GS} = 0 V, T _J = 175 °C			-700	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -10 V	-120			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = -10 V, I _D = -30 A			0.008	Ω
		V _{GS} = -4.5 V, I _D = -20 A			0.013	
		V _{GS} = -10 V, I _D = -30 A, T _J = 125 °C			0.014	
		V _{GS} = -10 V, I _D = -30 A, T _J = 175 °C			0.016	
Forward Transconductance ^a	g _{fs}	V _{DS} = -15 V, I _D = -30 A		75		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = -25 V, f = 1 MHz		8500		pF
Output Capacitance	C _{oss}			1220		
Reverse Transfer Capacitance	C _{rss}			915		
Total Gate Charge ^c	Q _g	V _{DS} = -30 V, V _{GS} = -10 V, I _D = -75 A		140	225	nC
Gate-Source Charge ^c	Q _{gs}			30		
Gate-Drain Charge ^c	Q _{gd}			30		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = -30 V, R _L = 0.47 Ω I _D = -75 A, V _{GEN} = -10 V, R _G = 2.5 Ω		13	20	ns
Rise Time ^c	t _r			140	225	
Turn-Off Delay Time ^c	t _{d(off)}			115	185	
Fall Time ^c	t _f			175	300	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b						
Continuous Current	I _s				-75	A
Pulsed Current	I _{SM}				-240	
Forward Voltage ^a	V _{SD}	I _F = -75 A, V _{GS} = 0 V		-1.1	-1.3	V
Reverse Recovery Time	t _{rr}	I _F = -75 A, di/dt = 100 A/μs		60	120	ns
Peak Reverse Recovery Current	I _{RM(REC)}			2.2	3.5	A
Reverse Recovery Charge	Q _{rr}			0.176	0.21	μC

Notes:

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

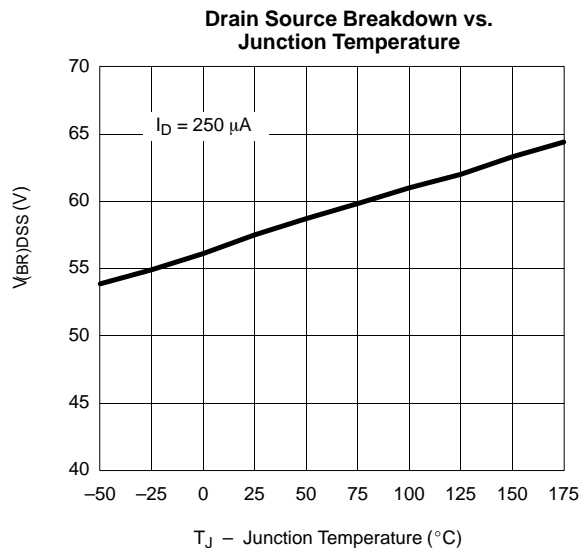
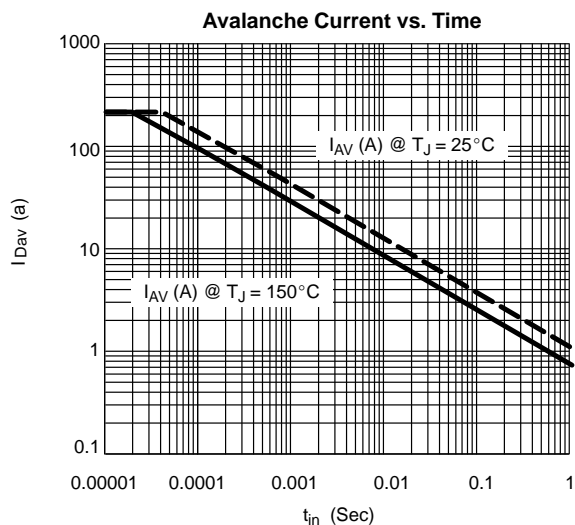
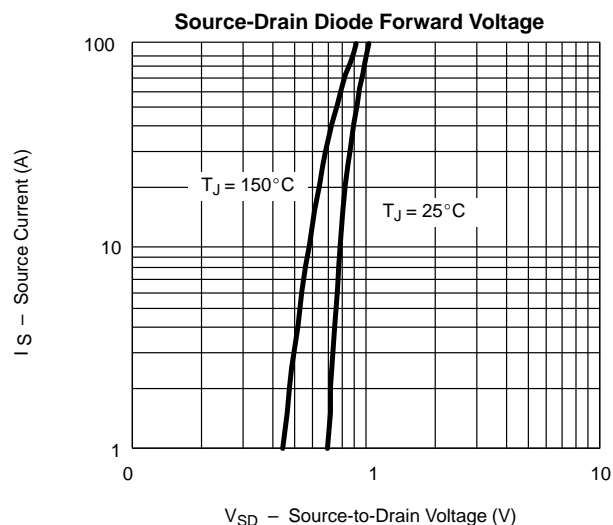
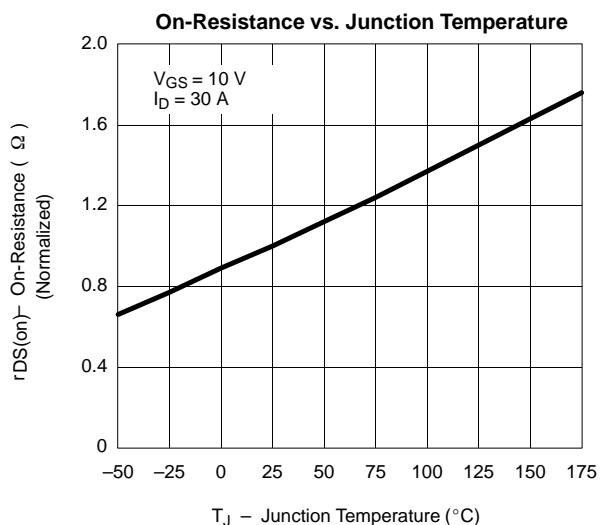


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





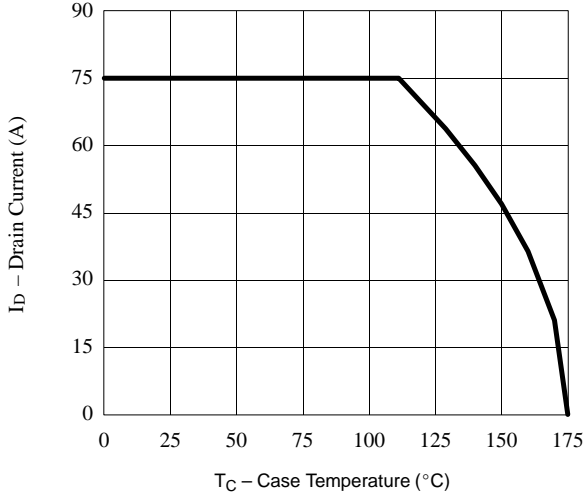
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



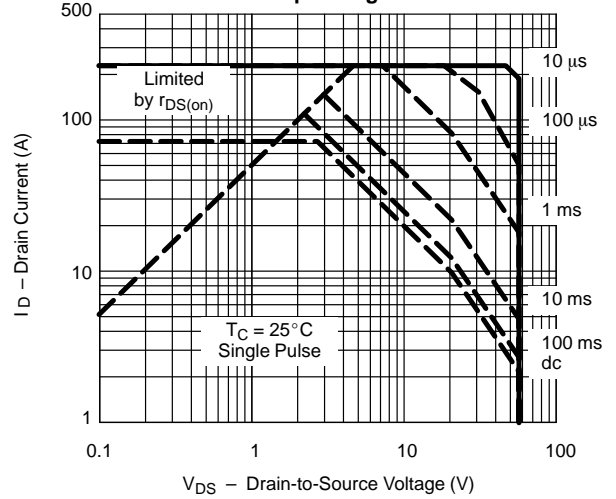


THERMAL RATINGS

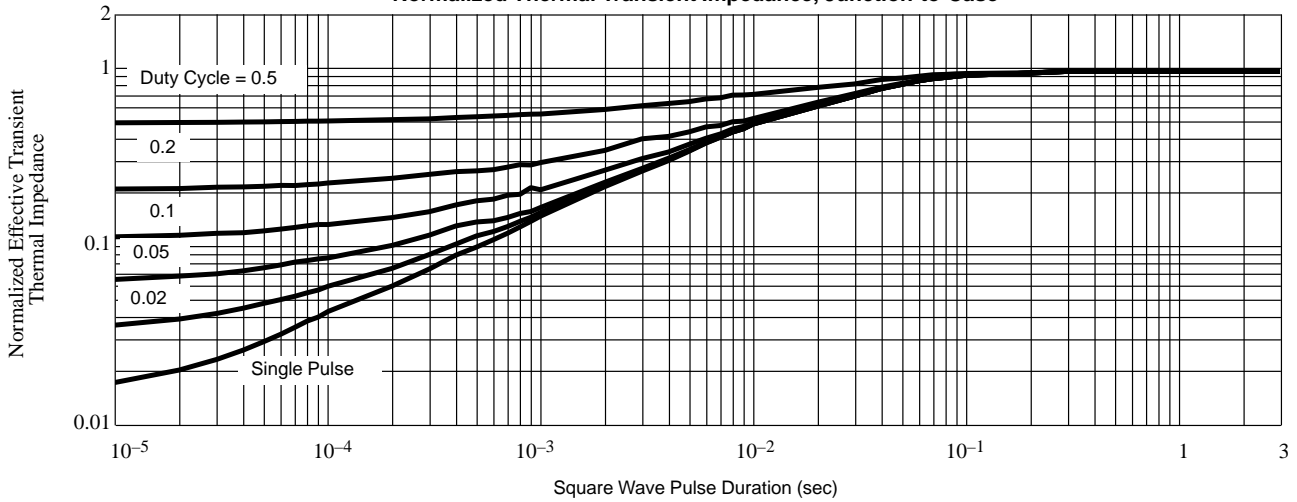
Maximum Avalanche and Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case





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