

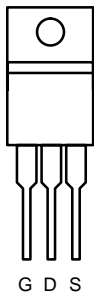


N-Channel 30-V (D-S), 175 °C MOSFET

PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.004	75 ^a

175 °C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

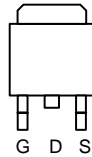
TO-220AB



Top View
SUP75N03-04

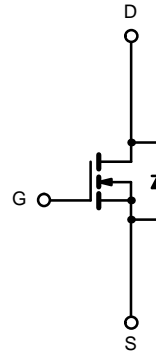
DRAIN connected to TAB

TO-263



Top View
SUB75N03-04

DRAIN connected to TAB



N-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 = 175 °C)	T _C = 25 °C	I _D	75 ^a	A
	T _C = 125 °C		75 ^a	
Pulsed Drain Current		I _{DM}	250	
Continuous Source Current (Diode Conduction)		I _S	75	
Avalanche Current		I _{AR}	75	
Avalanche Energy	L = 0.1 mH	E _{AS}	280	mJ
Repetitive Avalanche Energy ^b	L = 0.05 mH	E _{AR}	140	
Maximum Power Dissipation	T _C = 25 °C (TO-220AB and TO-263)	P _D	187 ^c	W
	T _A = 25 °C (TO-263) ^d		3.7	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 175	°C
Lead Temperature (1/16" from case for 10 sec.)	TO-220AB	T _L	300	

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Limit	Unit
Junction-to-Ambient	PCB Mount (TO-263) ^d	R _{thJA}	40	°C/W
	Free Air (TO-220AB)		62.5	
Junction-to-Case		R _{thJC}	0.8	

Notes

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

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 _{GS} = 0 V, I _D = 250 μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1		3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±500	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 125°C			50	
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 175°C			200	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	120			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 75 A		0.0034	0.004	Ω
		V _{GS} = 4.5 V, I _D = 75 A		0.005	0.006	
		V _{GS} = 10 V, I _D = 25 A, T _J = 125°C			0.006	
		V _{GS} = 10 V, I _D = 25 A, T _J = 175°C			0.008	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 25 A	30			S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		10742		pF
Output Capacitance	C _{oss}			1811		
Reverse Transfer Capacitance	C _{rss}			775		
Total Gate Charge	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 75 A		200	250	nC
Gate-Source Charge	Q _{gs}			40		
Gate-Drain Charge	Q _{gd}			40		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 30 V, R _L = 0.6 Ω I _D ≅ 50 A, V _{GEN} = 10 V, R _G = 2.5 Ω		20	40	ns
Rise Time	t _r			40		
Turn-Off Delay Time	t _{d(off)}			190		
Fall Time	t _f			95		
Source-Drain Diode Ratings and Characteristics						
Diode Forward Voltage ^b	V _{SD}	I _F = 75 A, V _{GS} = 0 V			1.3	V
Reverse Recovery Time	t _{rr}	I _F = 50 A, di/dt = 100 A/μs		70	120	ns
Peak Reverse Recovery Current	I _{RM(rec)}			2.8	6	A
Reverse Recovery Charge	Q _{rr}			0.1	0.36	μC

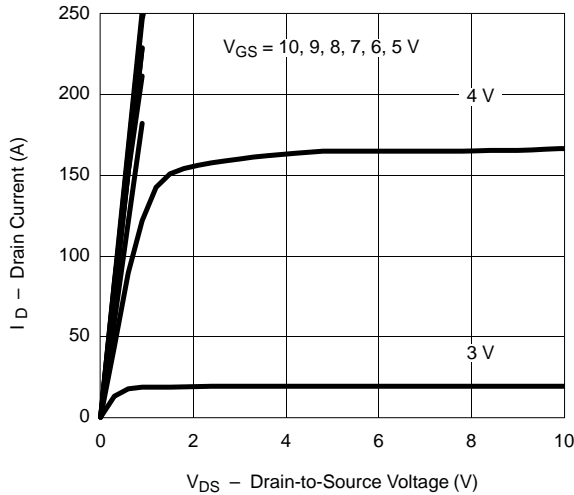
Notes:

- a. For design aid only; not subject to production testing.
- b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

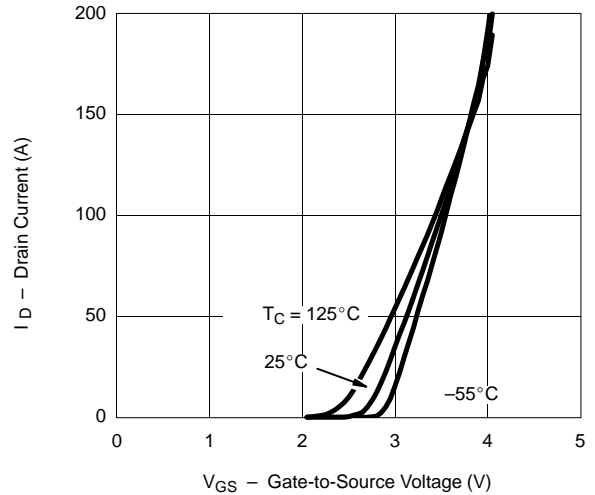


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

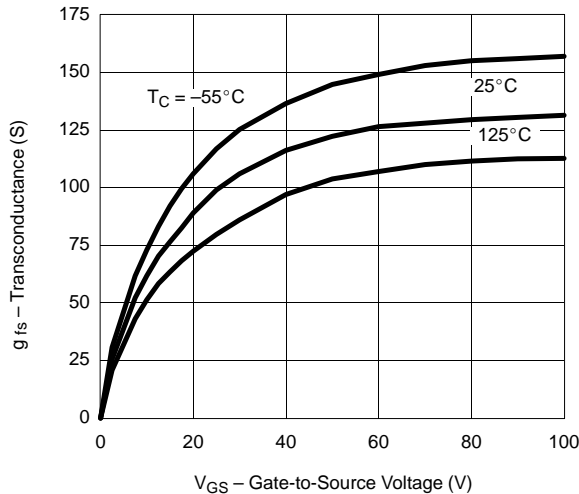
Output Characteristics



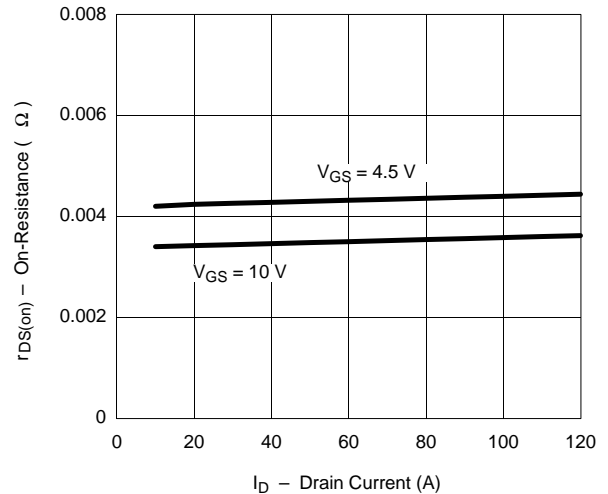
Transfer Characteristics



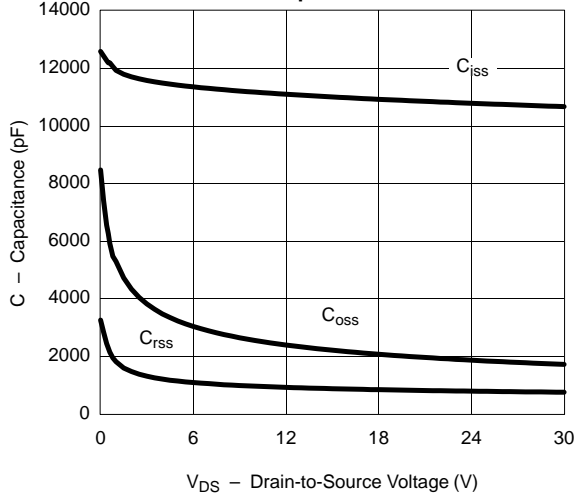
Transconductance



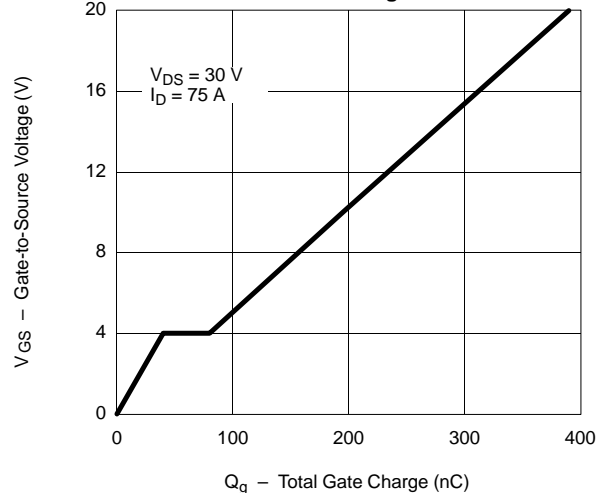
On-Resistance vs. Drain Current



Capacitance

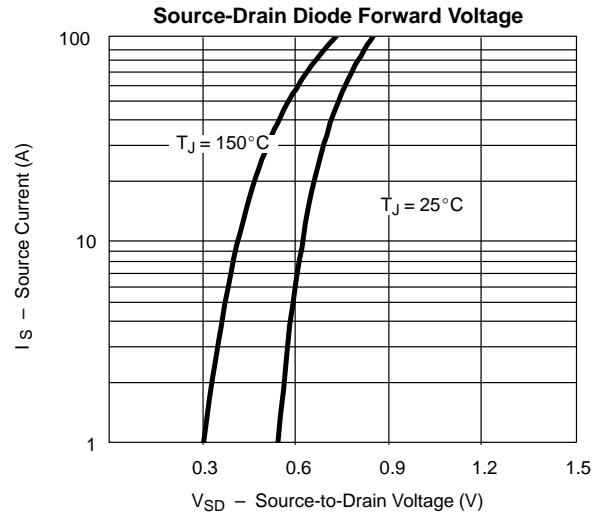
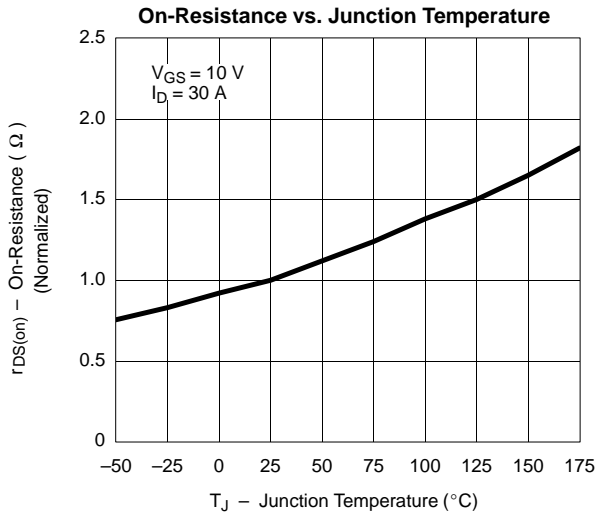


Gate Charge





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS

