



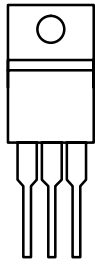
N-Channel 30-V (D-S), 175°C MOSFET

PRODUCT SUMMARY

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

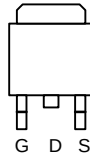
175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

TO-220AB

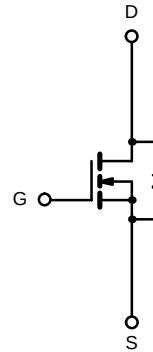
Top View
SUP75N03-04

DRAIN connected to TAB

TO-263

Top View
SUB75N03-04

DRAIN connected to TAB



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	75 ^a	A
	$T_C = 125^\circ\text{C}$		75 ^a	
Pulsed Drain Current		I_{DM}	250	
Continuous Source Current (Diode Conduction)		I_S	75	
Avalanche Current		I_{AR}	75	mJ
Avalanche Energy	$L = 0.1\text{ mH}$	E_{AS}	280	
Repetitive Avalanche Energy ^b	$L = 0.05\text{ mH}$	E_{AR}	140	
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$ (TO-220AB and TO-263)	P_D	187 ^c	W
	$T_A = 25^\circ\text{C}$ (TO-263) ^d		3.7	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$
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	$^\circ\text{C/W}$
	Free Air (TO-220AB)		62.5	
Junction-to-Case		R_{thJC}	0.6	

Notes

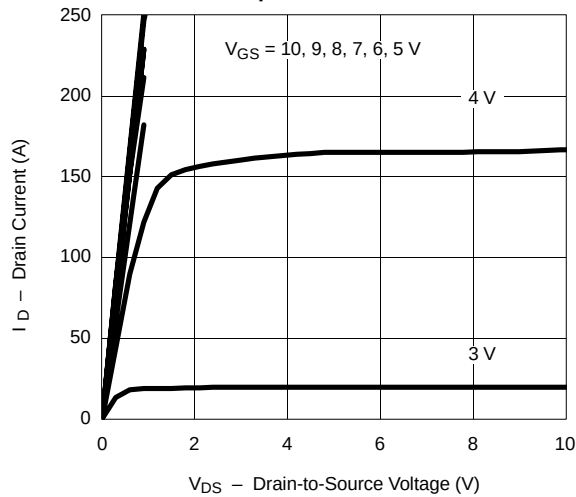
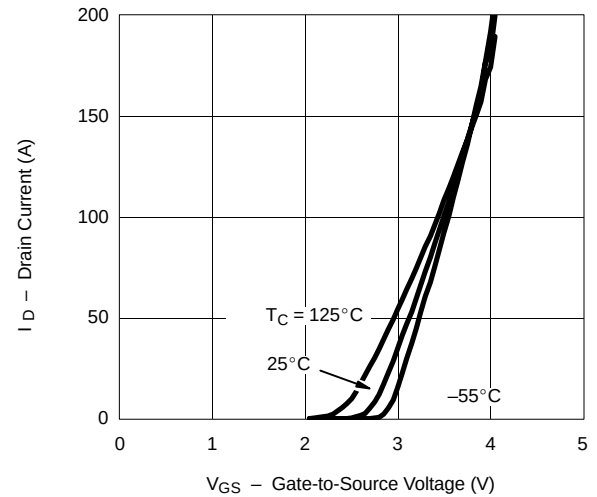
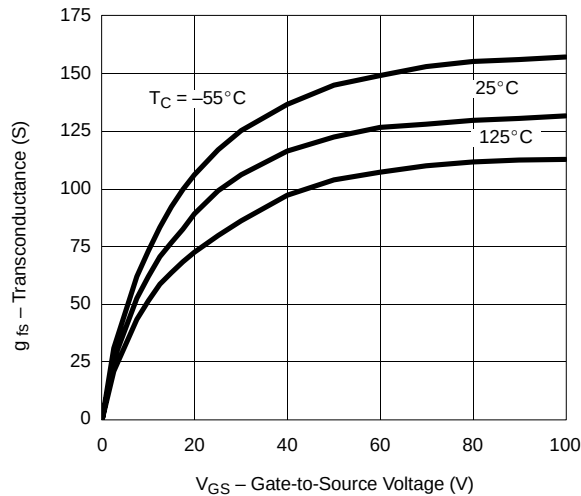
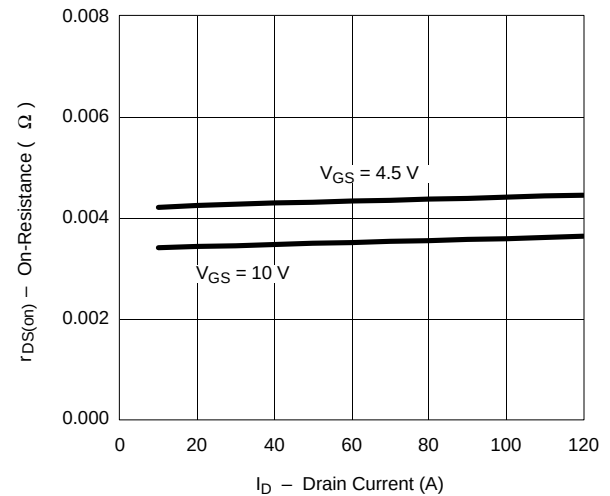
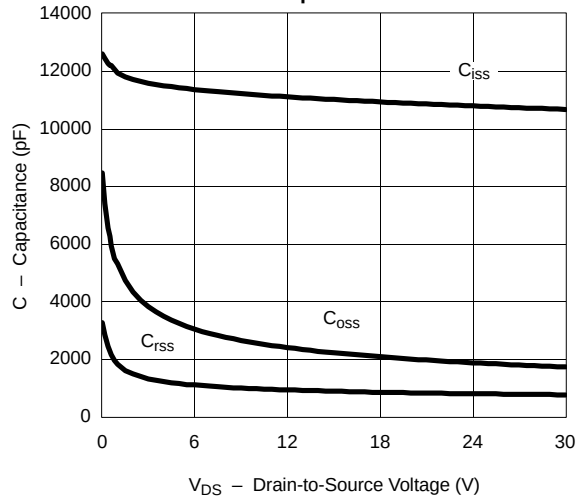
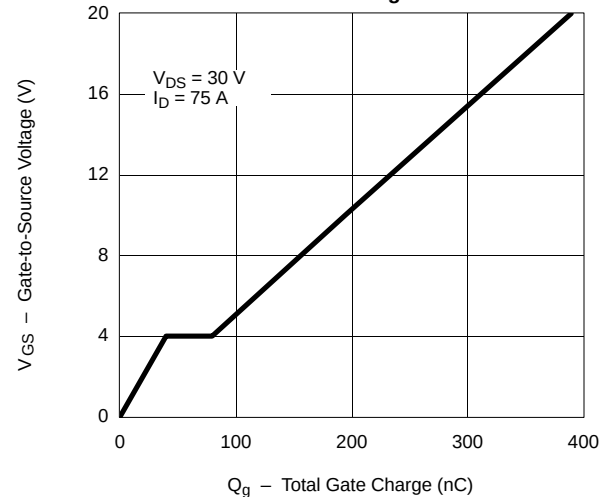
- Package limited.
- Duty cycle $\leq 1\%$.
- See SOA curve for voltage derating.
- When mounted on 1" square PCB (FR-4 material).

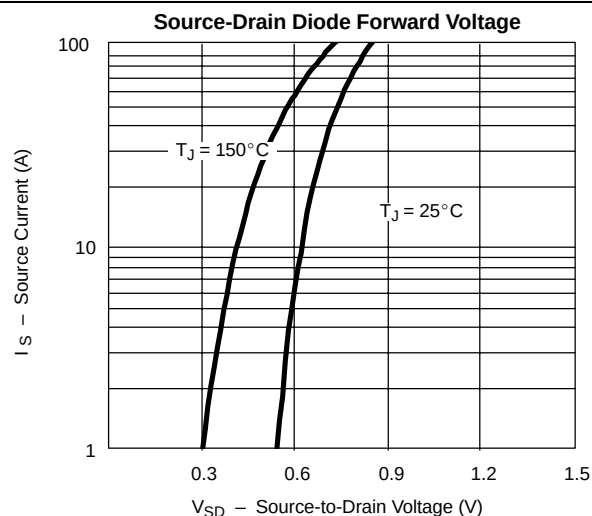
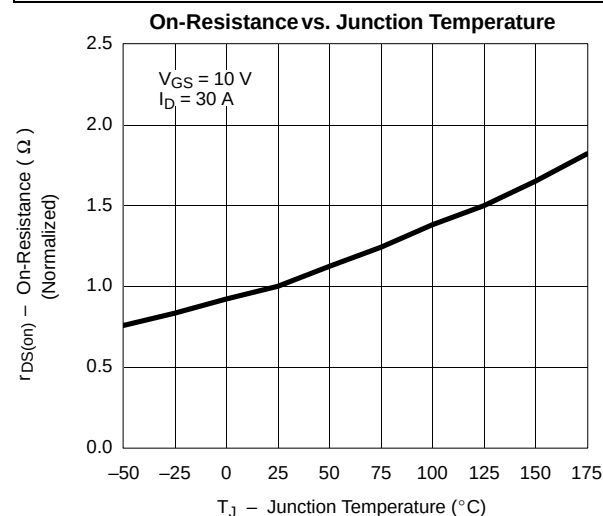
For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

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**