



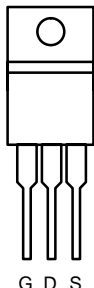
N-Channel 60-V (D-S), 175 °C MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.012 @ $V_{GS} = 10$ V	75
	0.014 @ $V_{GS} = 4.5$ V	70

175 °C Rated
Maximum Junction Temperature
TrenchFET[®]
Power MOSFETS

TO-220AB



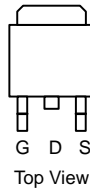
G D S

Top View

SUP75N06-12L

DRAIN connected to TAB

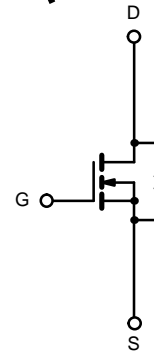
TO-263



G D S

Top View

SUB75N06-12L



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	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
		$T_C = 100^\circ\text{C}$	53
Pulsed Drain Current	I_{DM}	180	A
Avalanche Current	I_{AR}	60	
Repetitive Avalanche Energy ^a	E_{AR}	180	mJ
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$ (TO-220AB and TO-263)	142 ^b
		$T_A = 25^\circ\text{C}$ (TO-263) ^c	3.75 ^c
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) ^c	40
		Free Air (TO-220AB)	62.5
Junction-to-Case	R_{thJC}	1.05	$^\circ\text{C/W}$

Notes:

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



MOSFET 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	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	1	2		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	μA
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125° C			50	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 175° C			150	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	75			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.0085	0.012	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125° C			0.019	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175° C			0.024	
		V _{GS} = 4.5 V, I _D = 30 A		0.0105	0.014	
		V _{GS} = 4.5 V, I _D = 30 A, T _J = 125° C			0.0225	
		V _{GS} = 4.5 V, I _D = 30 A, T _J = 175° C			0.03	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A	25	60		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		3170		pF
Output Capacitance	C _{oss}			550		
Reverse Transfer Capacitance	C _{rss}			170		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 75 A		59	100	nC
Gate-Source Charge ^c	Q _{gs}			10		
Gate-Drain Charge ^c	Q _{gd}			13.5		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 0.4 Ω I _D = 75 A, V _{GEN} = 10 V, R _G = 2.5 Ω		9	20	ns
Rise Time ^c	t _r			8	20	
Turn-Off Delay Time ^c	t _{d(off)}			77	150	
Fall Time ^c	t _f			20	40	
Source-Drain Diode Ratings and Characteristics (T_C = 25° C)^b						
Continuous Current	I _s				75	A
Pulsed Current	I _{SM}				180	
Forward Voltage ^a	V _{SD}	I _F = 75 A, V _{GS} = 0 V			1.4	V
Reverse Recovery Time	t _{rr}	I _F = 60 A, di/dt = 100 A/μs		45		ns
Peak Reverse Recovery Current	I _{RM(REC)}			2		A
Reverse Recovery Charge	Q _{rr}				0.045	

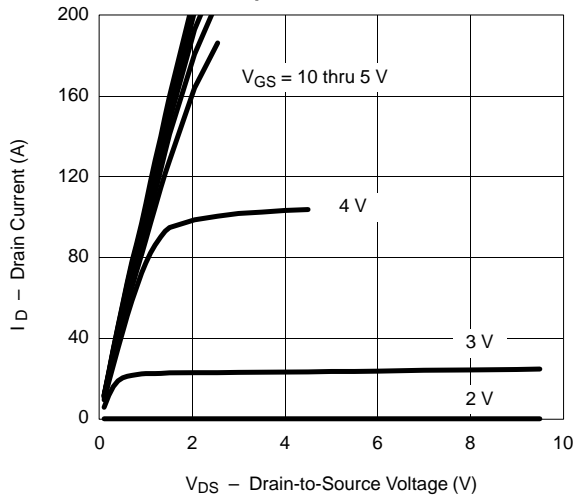
Notes:

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

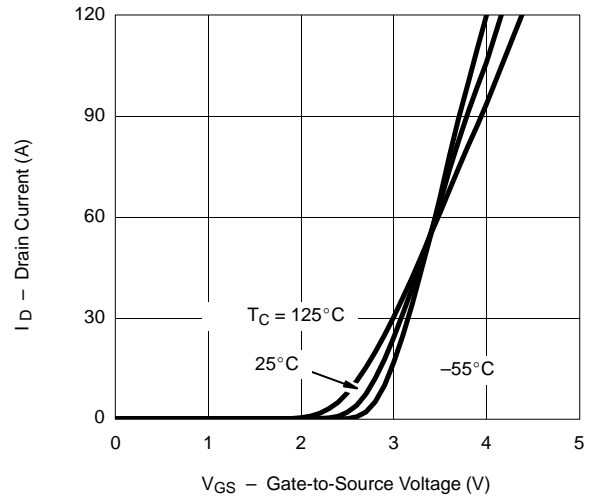


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

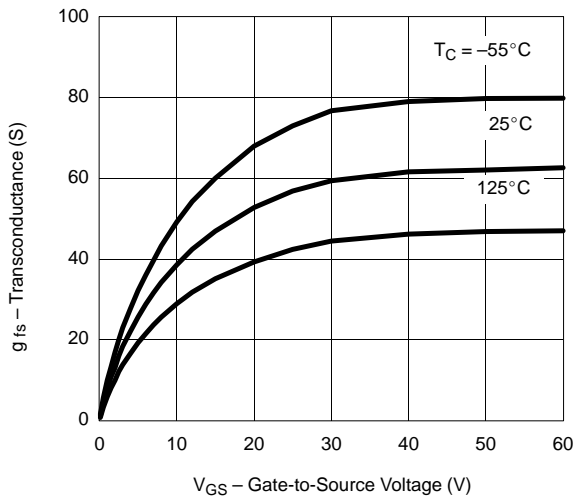
Output Characteristics



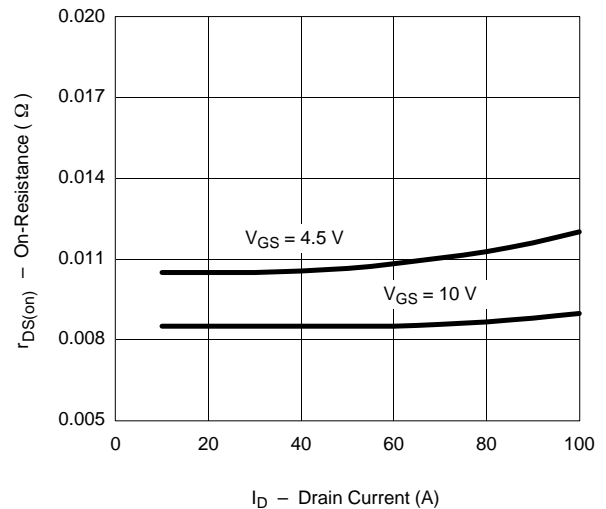
Transfer Characteristics



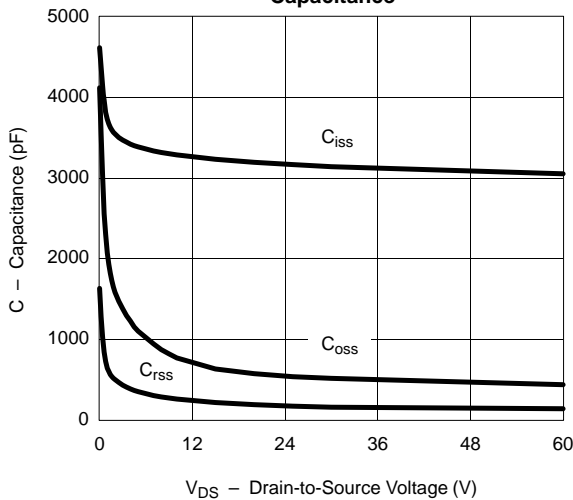
Transconductance



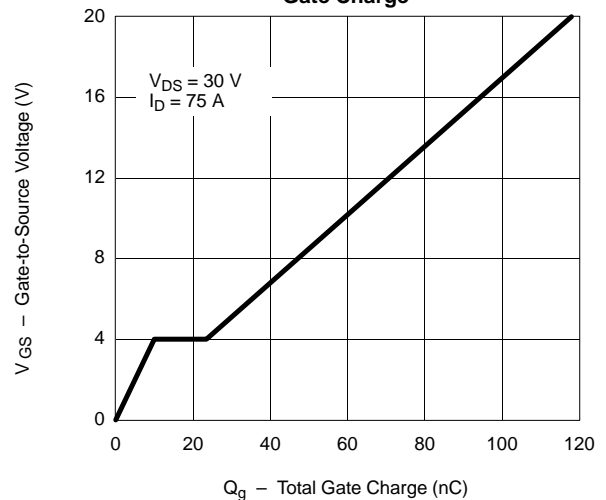
On-Resistance vs. Drain Current



Capacitance

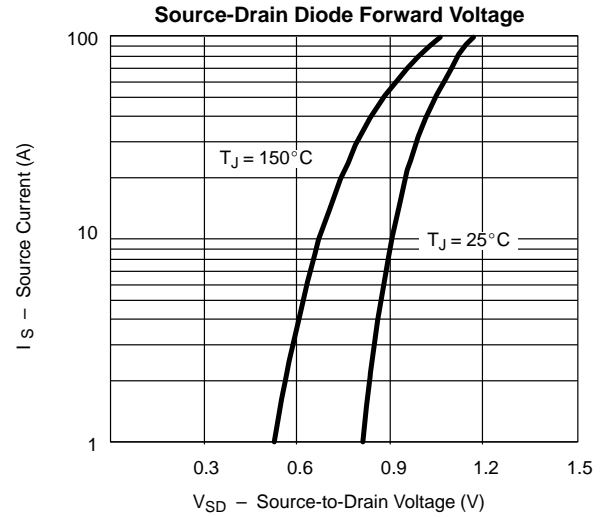
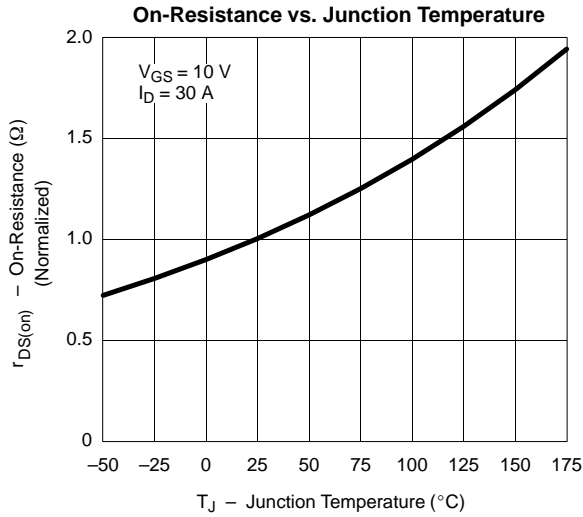


Gate Charge





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS

