

N-Channel Enhancement-Mode Transistor, 18-mΩ $r_{DS(on)}$

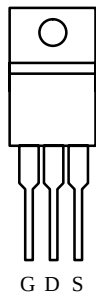
Product Summary

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.018	60

175°C Rated
Maximum Junction Temperature

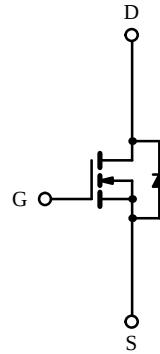
See lower-cost version: SUP50N06-18

TO-220AB



Top View

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	I_D	$T_C = 25^\circ\text{C}$	60
		$T_C = 100^\circ\text{C}$	41
Pulsed Drain Current	I_{DM}	240	A
Avalanche Current	I_{AR}	60	
Avalanche Energy	$L = 0.1\text{ mH}$	I_{AR}	180
Repetitive Avalanche Energy ^a	$L = 0.1\text{ mH}$	E_{AR}	90
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	125
		$T_C = 100^\circ\text{C}$	62
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.)	T_L	300	

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient	R_{thJA}		80	$^\circ\text{C/W}$
Junction-to-Case	R_{thJC}		1.2	
Case-to-Sink	R_{thCS}	1.0		

Notes:

a. Duty cycle $\leq 1\%$

Subsequent updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #1437. A SPICE Model data sheet is available for this product (FaxBack document #5118).

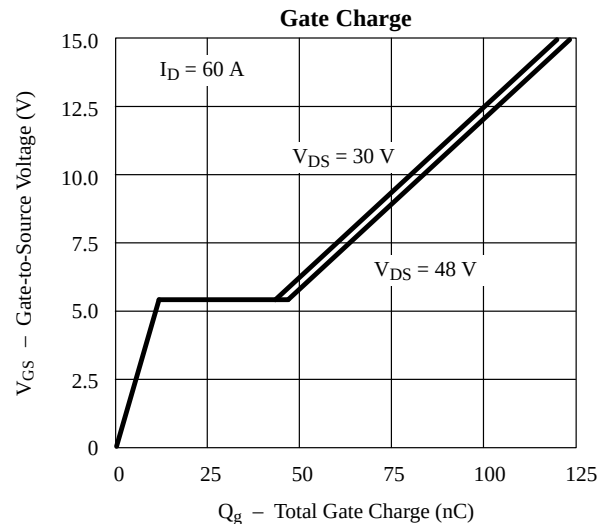
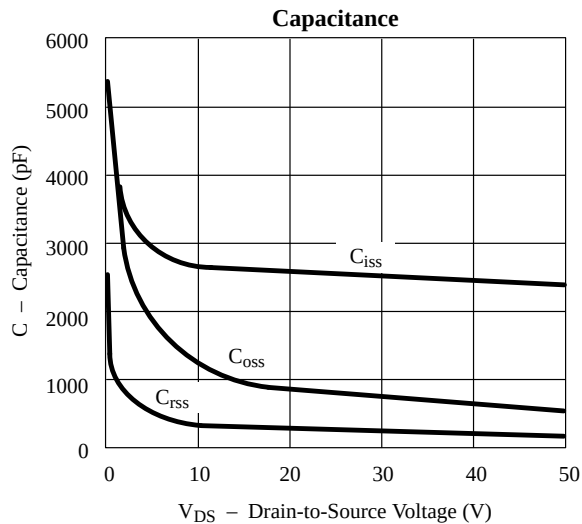
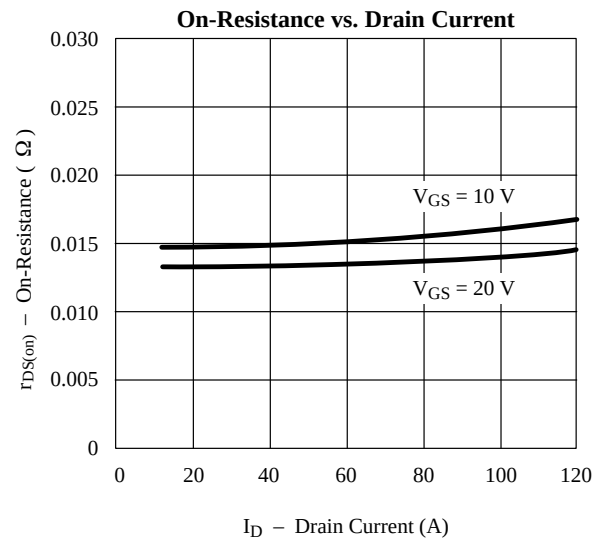
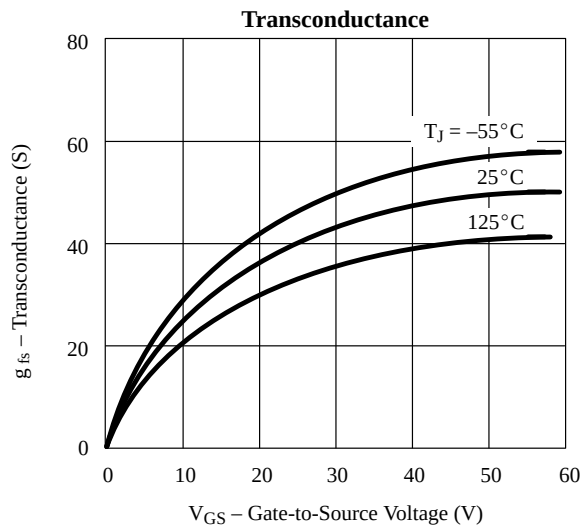
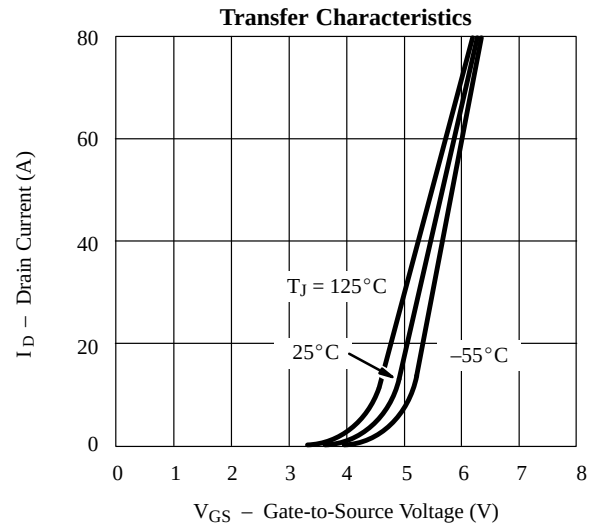
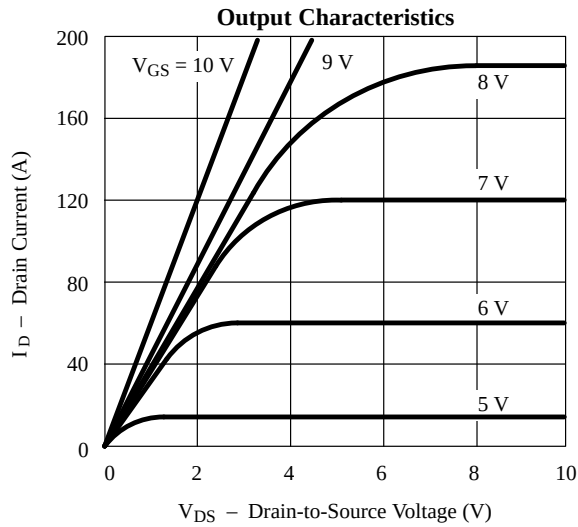
Specifications (T_J = 25°C Unless Otherwise Noted)

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	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 1 mA	2.0		4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±500	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 48 V, V _{GS} = 0 V			25	μA
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 125°C			250	
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 175°C			500	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 10 V	60			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.013	0.018	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125°C		0.023	0.030	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175°C		0.026	0.036	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 30 A		45		S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2600		pF
Output Capacitance	C _{oss}			800		
Reversen Transfer Capacitance	C _{rss}			200		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 60 A		85	100	nC
Gate-Source Charge ^c	Q _{gs}			15	20	
Gate-Drain Charge ^c	Q _{gd}			35	50	
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 1 Ω I _D ≈ 30 A, V _{GEN} = 10 V, R _G = 2.5 Ω		15	30	ns
Rise Time ^c	t _r			20	35	
Turn-Off Delay Time ^c	t _{d(off)}			50	65	
Fall Time ^c	t _f			20	30	
Source-Drain Diode Ratings and Characteristics (T _C = 25°C)						
Continuous Current	I _S				60	A
Pulsed Current	I _{SM}				240	
Forward Voltage ^b	V _{SD}	I _F = 60 A, V _{GS} = 0 V			2.0	V
Reverse Recovery Time	t _{rr}	I _F = 60 A, dI _F /dt = 100 A/μs		160		ns
Peak Reverse Recovery Current	I _{RM(REC)}			13		A
Reverse Recovery Charge	Q _{rr}			1.0		μC

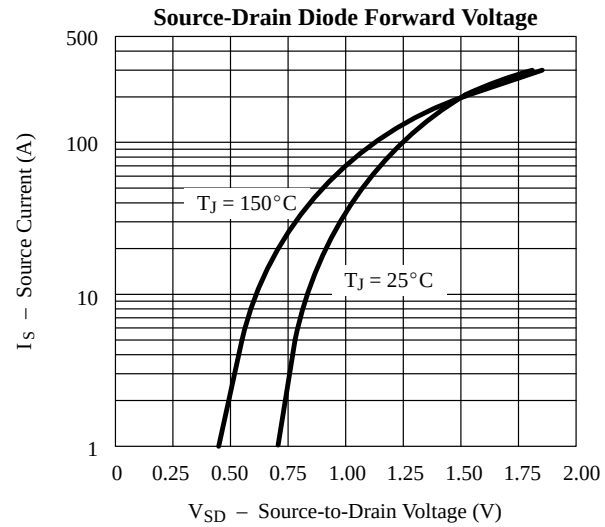
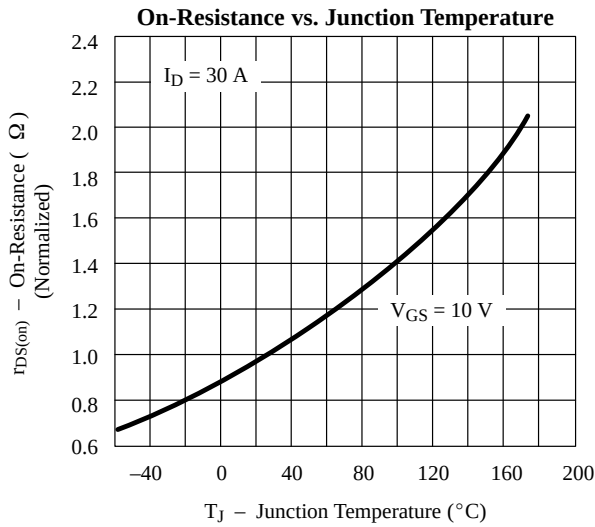
Notes:

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

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

