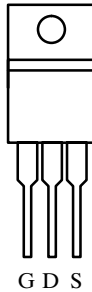


P-Channel Enhancement-Mode Transistors

Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-60	0.020	-65 ^a

TO-220AB

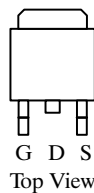


Top View

SUP65P06-20

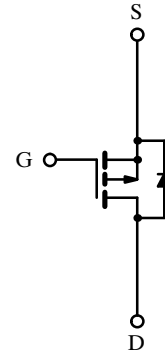
DRAIN connected to TAB

TO-263



SUB65P06-20

175°C Rated
Maximum Junction Temperature



P-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	-65 ^a	A
	$T_C = 125^\circ\text{C}$		-39	
Pulsed Drain Current		I_{DM}	-200	
Avalanche Current		I_{AR}	-60	
Repetitive Avalanche Energy ^b	$L = 0.1\text{ mH}$	E_{AR}	180	mJ
Power Dissipation	$T_C = 25^\circ\text{C}$ (TO-220AB and TO-263)	P_D	187 ^d	W
	$T_A = 125^\circ\text{C}$ (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	PCB Mount (TO-263) ^c	R_{thJA}	40	$^\circ\text{C/W}$
	Free Air (TO-220AB)	R_{thJA}	62.5	
Junction-to-Case		R_{thJC}	0.8	

Notes:

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

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70289. A SPICE Model data sheet is available for this product (FaxBack document #70543).

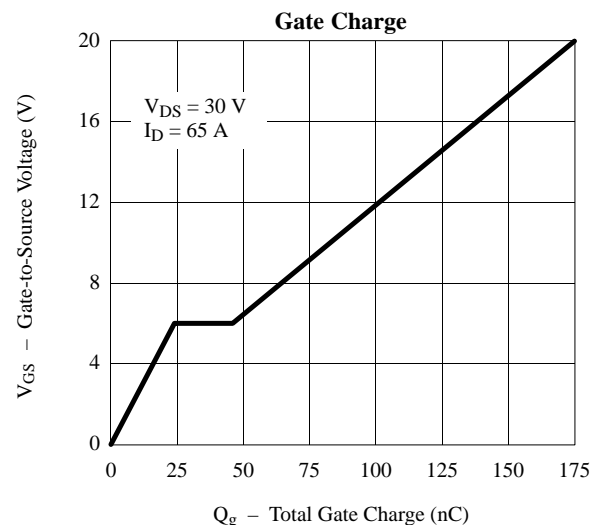
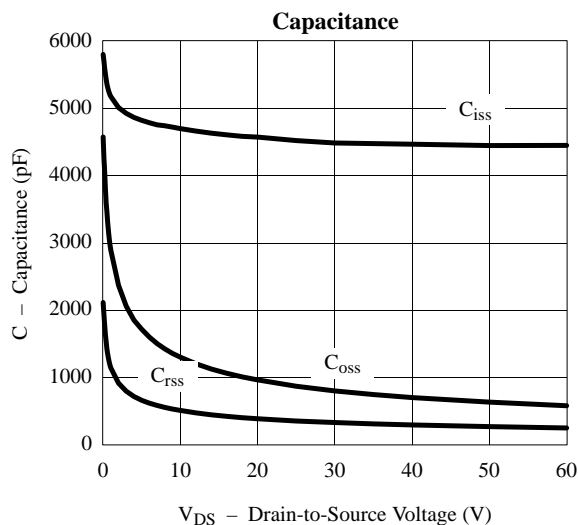
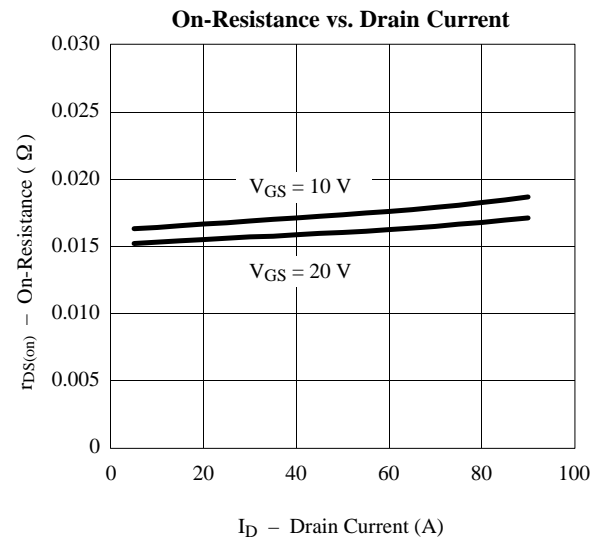
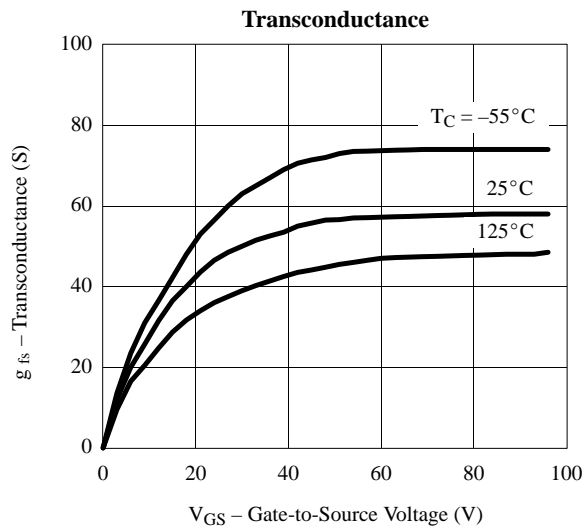
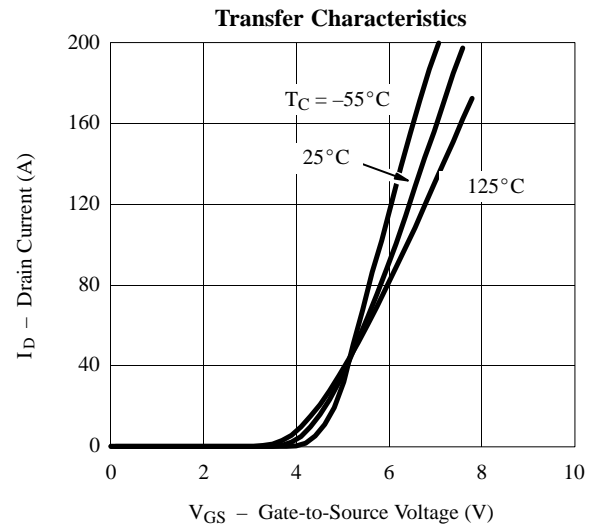
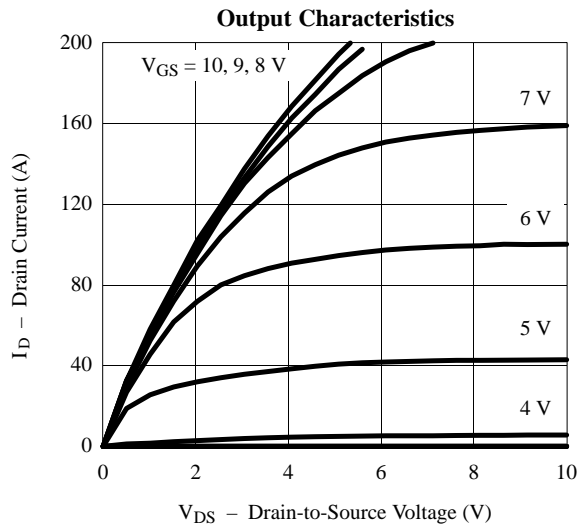
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

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 _D = −250 μA	−2.0	−3.0	−4.0	
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 ^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 = −30 A		0.017	0.020	Ω
		V _{GS} = −10 V, I _D = −30 A, T _J = 125°C			0.033	
		V _{GS} = −10 V, I _D = −30 A, T _J = 175°C			0.042	
Forward Transconductance ^b	g _{fs}	V _{DS} = −15 V, I _D = −30 A	25			S
Dynamic ^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = −25 V, f = 1 MHz		4500		pF
Output Capacitance	C _{oss}			870		
Reverse Transfer Capacitance	C _{rss}			350		
Total Gate Charge ^c	Q _g	V _{DS} = −30 V, V _{GS} = −10 V, I _D = −65 A		85	120	nC
Gate-Source Charge ^c	Q _{gs}			24		
Gate-Drain Charge ^c	Q _{gd}			22		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = −30 V, R _L = 0.47 Ω I _D ≈ −65 A, V _{GEN} = −10 V, R _G = 2.5 Ω		15	40	ns
Rise Time ^c	t _r			40	80	
Turn-Off Delay Time ^c	t _{d(off)}			65	120	
Fall Time ^c	t _f			30	60	
Source-Drain Diode Ratings and Characteristics (T _C = 25°C) ^a						
Continuous Current	I _s				−65	A
Pulsed Current	I _{SM}				−200	
Forward Voltage ^b	V _{SD}	I _F = −65 A, V _{GS} = 0 V		−1.1	−1.4	V
Reverse Recovery Time	t _{rr}	I _F = −65 A, di/dt = 100 A/μs		70	120	ns
Peak Reverse Recovery Current	I _{RM(REC)}			7	9	A
Reverse Recovery Charge	Q _{rr}			0.245	0.54	μC

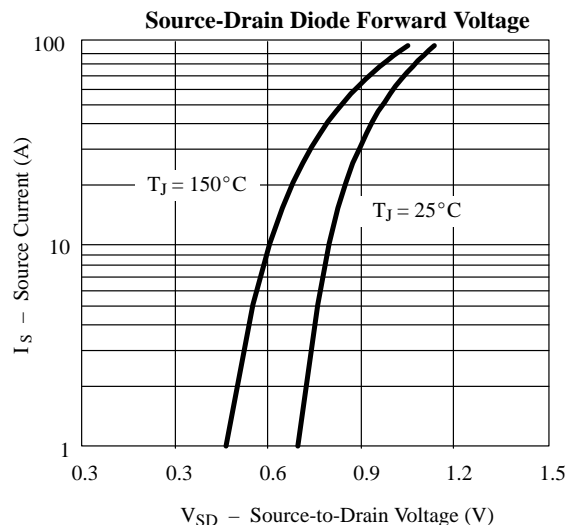
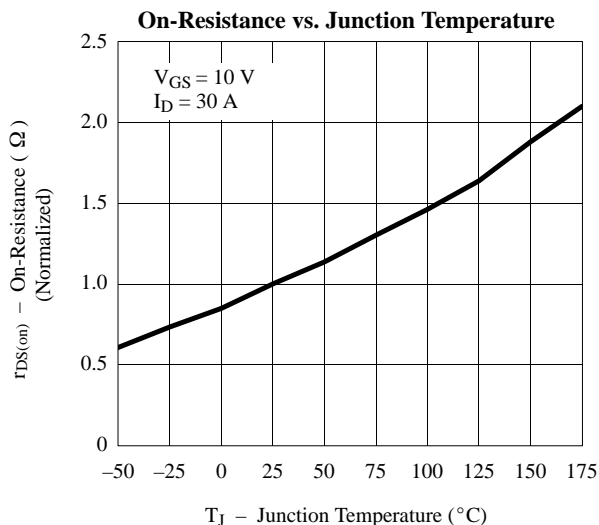
Notes:

- Guaranteed by design, not subject to production testing.
- Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.

Typical Characteristics (25°C Unless Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

