



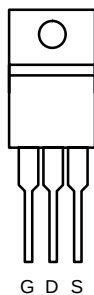
N-Channel 60-V (D-S), 175°C MOSFET

PRODUCT SUMMARY

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

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

TO-220AB

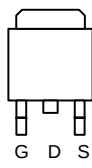


Top View

SUP60N06-18

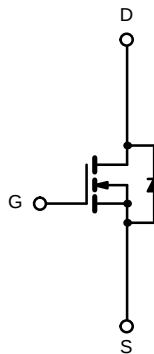
DRAIN connected to TAB

TO-263



Top View

SUB60N06-18



N-Channel MOSFET

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	60	A
	$T_C = 100^\circ\text{C}$		39	
Pulsed Drain Current		I_{DM}	120	
Avalanche Current		I_{AR}	60	
Repetitive Avalanche Energy ^a		E_{AR}	180	mJ
Power Dissipation	$T_C = 25^\circ\text{C}$ (TO-220AB and TO-263)	P_D	120 ^b	W
	$T_A = 25^\circ\text{C}$ (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)		62.5	
Junction-to-Case		R_{thJC}	1.25	

Notes:

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

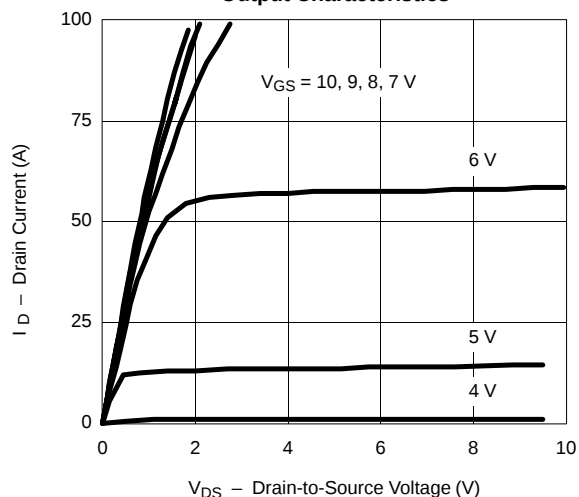
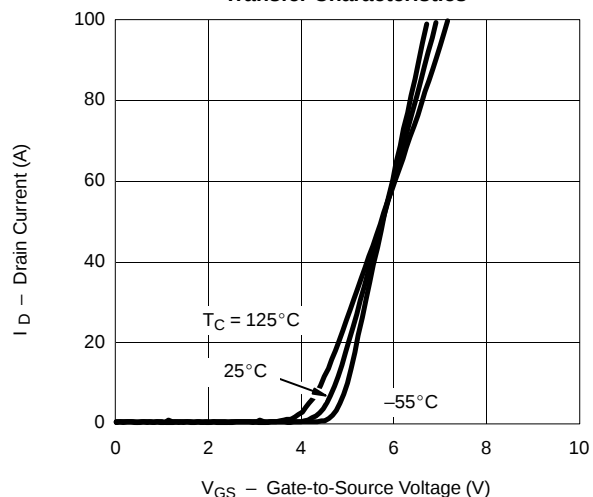
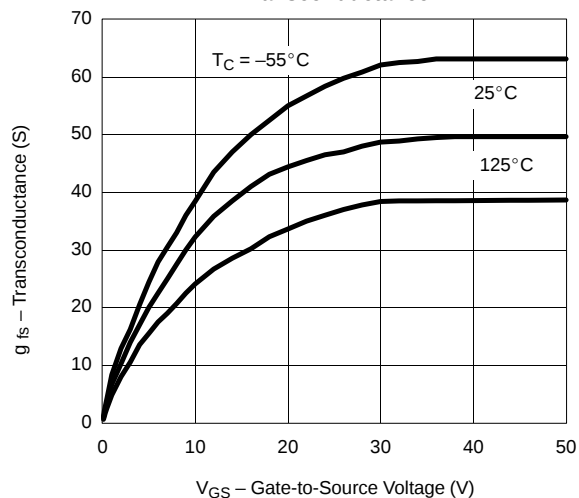
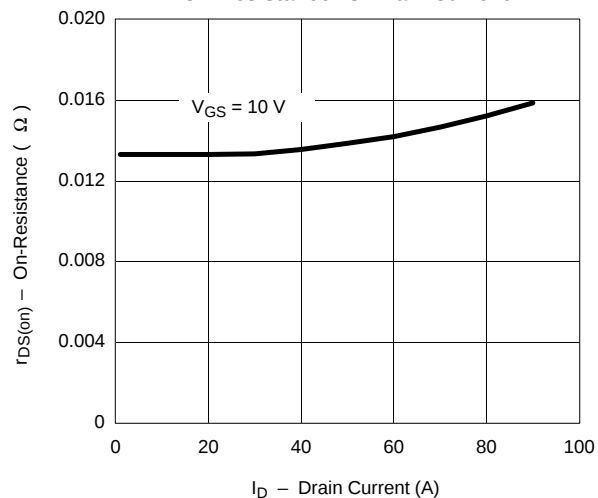
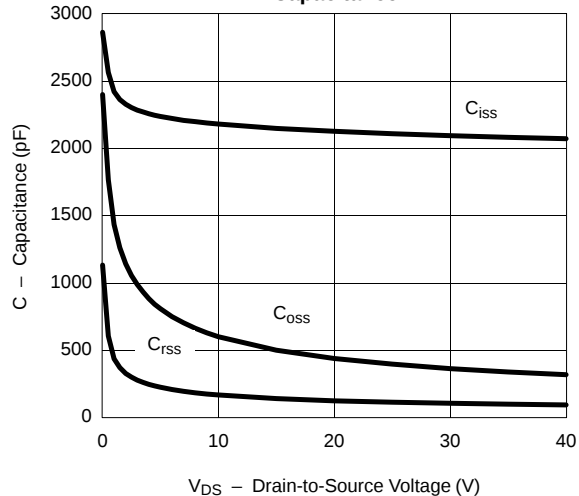
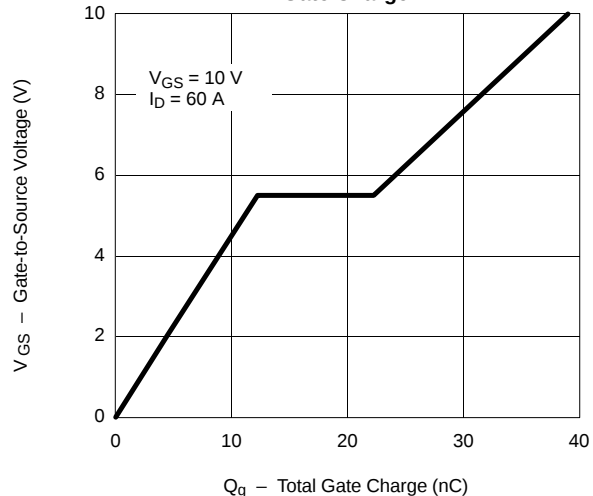
For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>



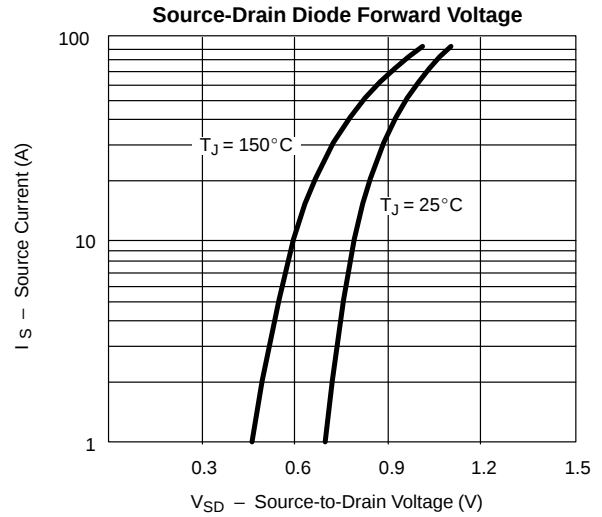
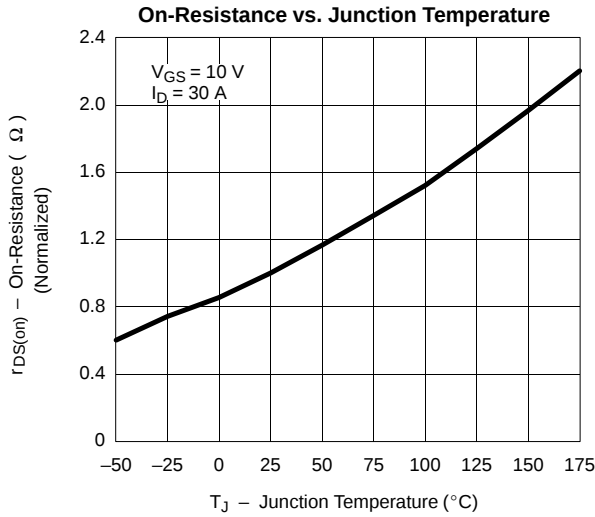
SPECIFICATIONS (T _J = 25° C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 1 mA	2.0		4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 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	60			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.014	0.018	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125° C		0.024	0.030	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175° C		0.031	0.036	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A		49		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2000		pF
Output Capacitance	C _{OSS}			400		
Reverse Transfer Capacitance	C _{rss}			115		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 60 A		39	60	nC
Gate-Source Charge ^c	Q _{gs}			12		
Gate-Drain Charge ^c	Q _{gd}			10		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 0.5 Ω I _D = 60 A, V _{GEN} = 10 V, R _G = 2.5 Ω		12	30	ns
Rise Time ^c	t _r			11	30	
Turn-Off Delay Time ^c	t _{d(off)}			25	50	
Fall Time ^c	t _f			15	30	
Source-Drain Diode Ratings and Characteristics (T _C = 25° C) ^b						
Continuous Current	I _S				60	A
Pulsed Current	I _{SM}				120	
Forward Voltage ^a	V _{SD}	I _F = 60 A, V _{GS} = 0 V			1.6	V
Reverse Recovery Time	t _{rr}	I _F = 60 A, di/dt = 100 A/μs		60		ns
Peak Reverse Recovery Current	I _{RM(REC)}			6.0		A
Reverse Recovery Charge	Q _{rr}			0.4		μC

Notes:

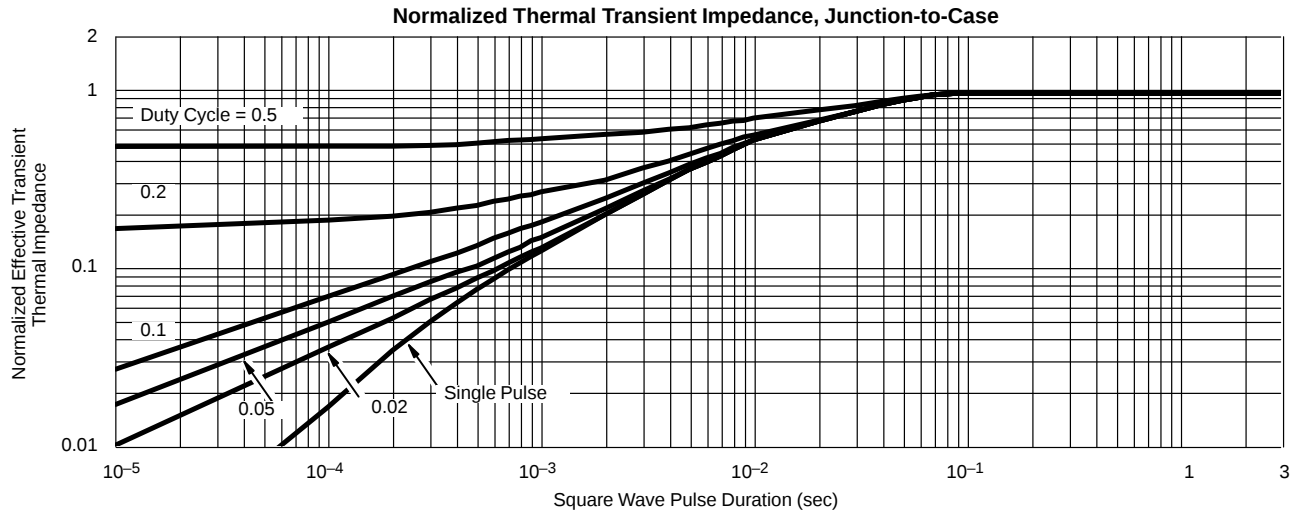
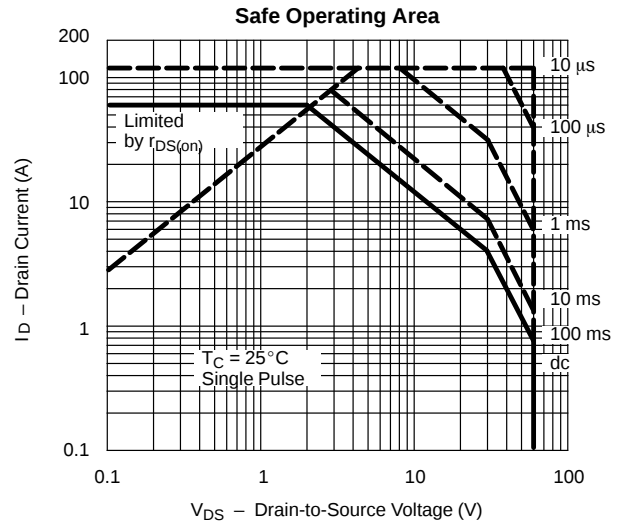
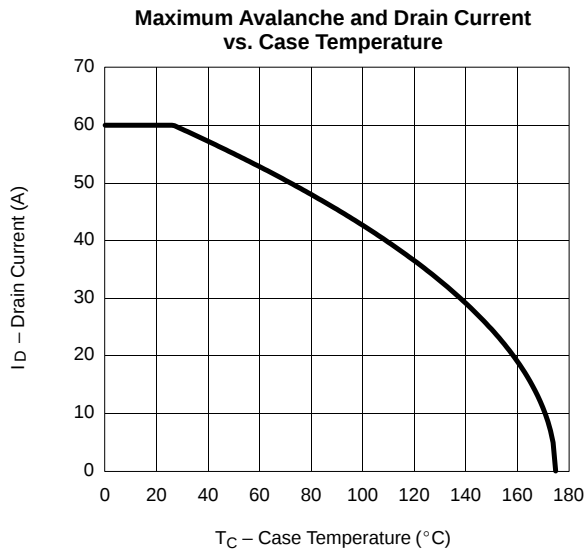
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.
c. Independent of operating temperature.

**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





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