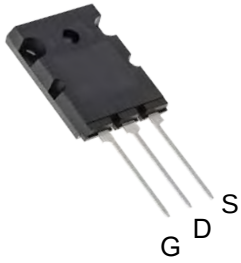
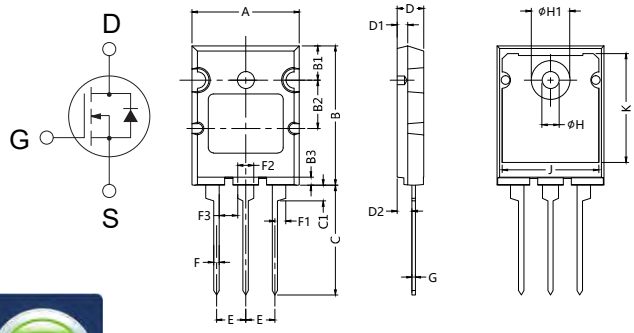
SMOS98N50B3

Power MOSFETs



G=Gate
D=Drain
S=Source

Dimensions TO-264



Dim.	Millimeter		Dim.	Millimeter	
	Min.	Max.		Min.	Max.
A	19.50	20.50	E	5.45TYP	
B	25.70	26.30	F	0.90	1.25
B1	5.80	6.20	F1	2.30	2.75
B2	8.80	9.20	F2	2.80	3.20
B3	1.35REF		F3	2.40	/
C	19.50	20.50	G	0.50	0.85
C1	2.20	2.70	H	3.20	3.60
D	4.80	5.20	H1	6.50	7.50
D1	2.00REF		J	16.00	/
D2	2.50	3.10	K	19.00	/

Symbol	Test Conditions	Maximum Ratings	Unit
V_{DSS}	T_J=25°C to 150°C	500	V
V_{DGR}	T_J=25°C to 150°C; R_{GS}=1MΩ	500	
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	
I_{D25}	T_C=25°C	98	A
I_{DM}	T_C=25°C; pulse width limited by T_{JM}	400	A
I_{AR}	T_C=25°C	98	A
E_{AR}	T_C=25°C	600	mJ
dv/dt	$I_S \le I_{DM}$; di/dt≤100A/us; $V_{DD} \le V_{DSS}$, $T_{JS} \le 150$°C; R_G=2Ω	5	V/ns
P_D	T_C=25°C	1320	W
T_J		-55...+150	°C
T_{JM}		150	
T_{stg}		-55...+150	
T_L	1.6mm(0.063 in.) from case for 10s	300	°C
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight	typical	8	g

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(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
V_{DSS}	V_{GS}=0V; I_D=1 mA	500			V
$V_{GS(th)}$	V_{DS}=V_{GS}; I_D=8 mA	3		4	V
I_{GSS}	V_{GS}=±20V_{DC}; V_{DS}=0			±400	nA
I_{DSS}	V_{DS}=0.8V_{DSS}; T_J=25°C V_{GS}=0V; T_J=125°C			800 4	uA mA
$R_{DS(on)}$	V_{GS}=10V; I_D=0.5I_{D25} Pulse test, t≤300us, duty cycle d≤2%		0.040	0.055	Ω

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
g_{ts}	V_{DS}=10V; I_D=0.5I_{D25}; pulse test	42	75		S
C_{ies} C_{oes} C_{res}	V_{GS}=0V; V_{DS}=25V; f=1MHz		16800 1260 160		pF
$Q_{g(on)}$ Q_{gs} Q_{gd}	V_{GS}=10V; V_{DS}=0.5V_{DSS}; I_D=0.5I_{D25}		220 90 55		nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	V_{GS}=10V; V_{DS}=0.5V_{DSS}; I_D=0.5I_{D25} R_G=1Ω (External)		35 16 80 15		ns ns ns ns
R_{thJC}				0.10	K/W
R_{thCK}			0.12		K/W

Source-Drain Diode

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
I_S	V_{GS}=0V			98	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			390	A
V_{SD}	I_F=98A; V_{GS}=0V; Pulse test, t≤300us, duty cycle d≤2%			1.5	V
t_{rr} Q_{RM} I_{RM}	I_F=0.5I_S; -di/dt=100A/us; V_R=100V;		 TBD 20	550	ns uC A

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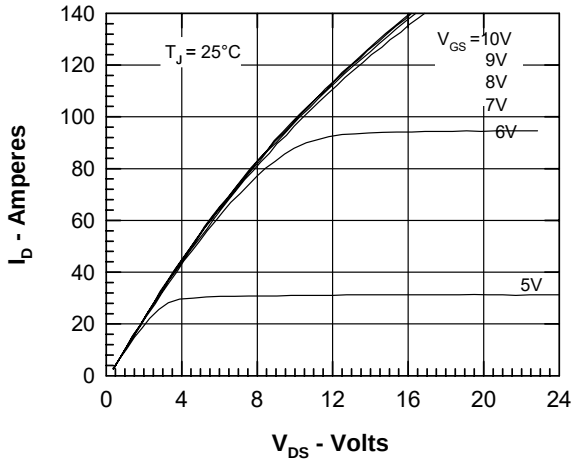

Figure 1. Output Characteristics at 25°C

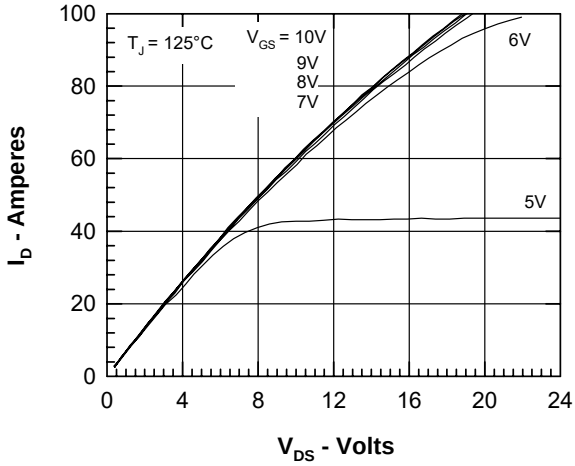

Figure 2. Output Characteristics at 125°C

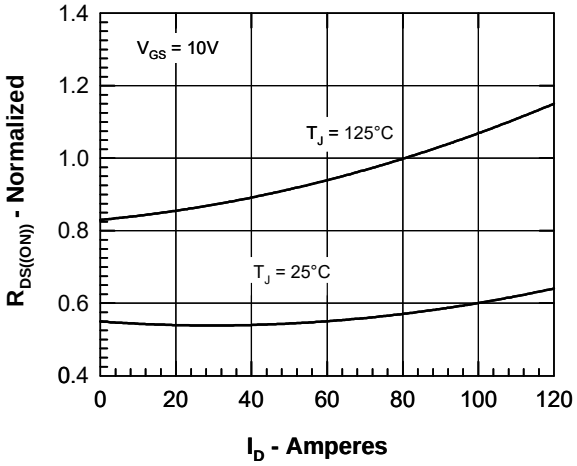

Figure 3. RDS(on) normalized to 0.5 I_{D25} value vs. I_D

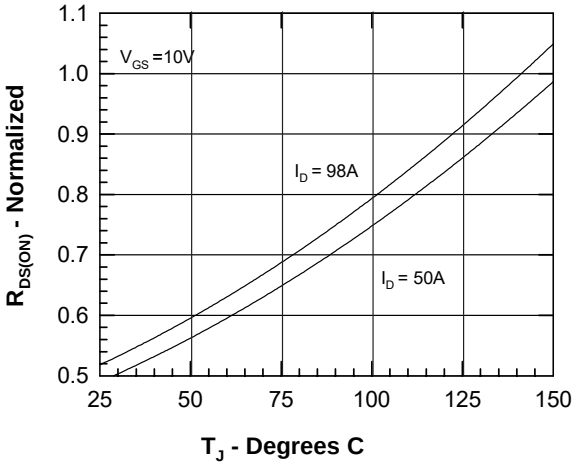

Figure 4. $R_{DS(on)}$ normalized to 0.5 I_{D25} value vs. T_J

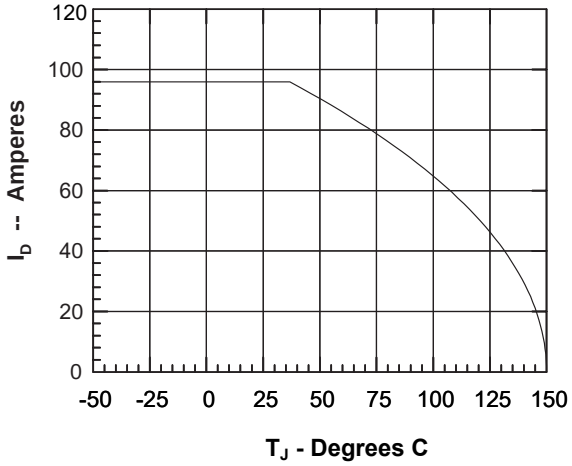

Figure 5. Drain Current vs. Case Temperature

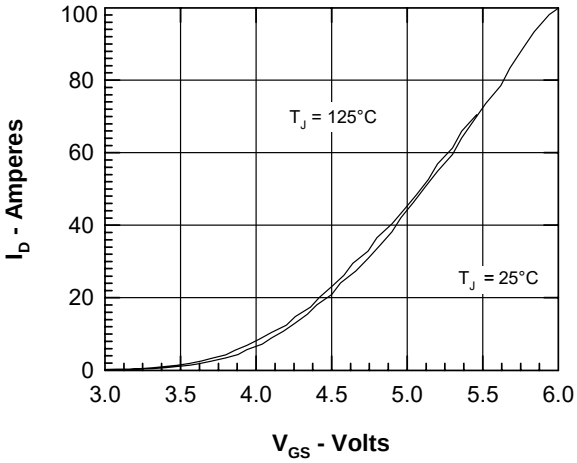

Figure 6. Admittance Curves

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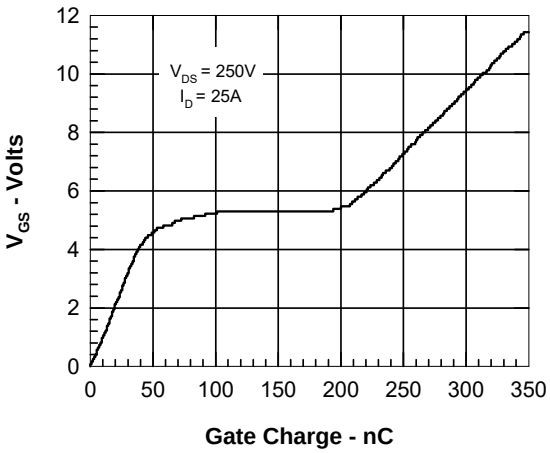

Figure 7. Gate Charge

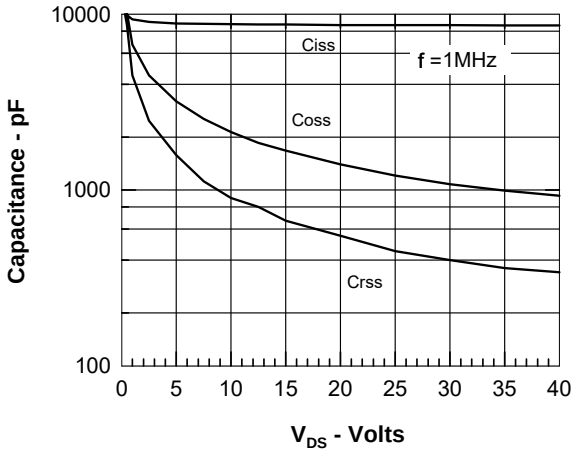

Figure 8. Capacitance Curves

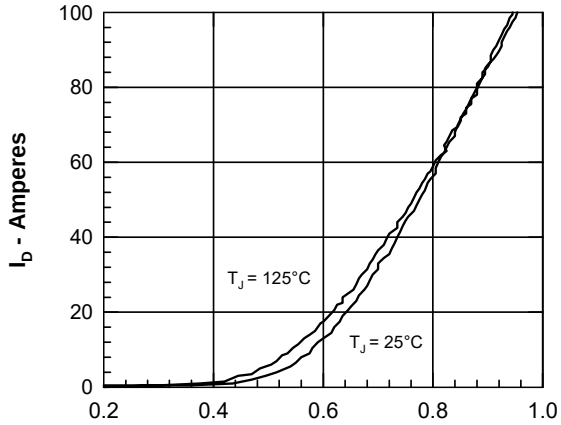

Figure 9. Forward Voltage Drop of the Intrinsic Diode

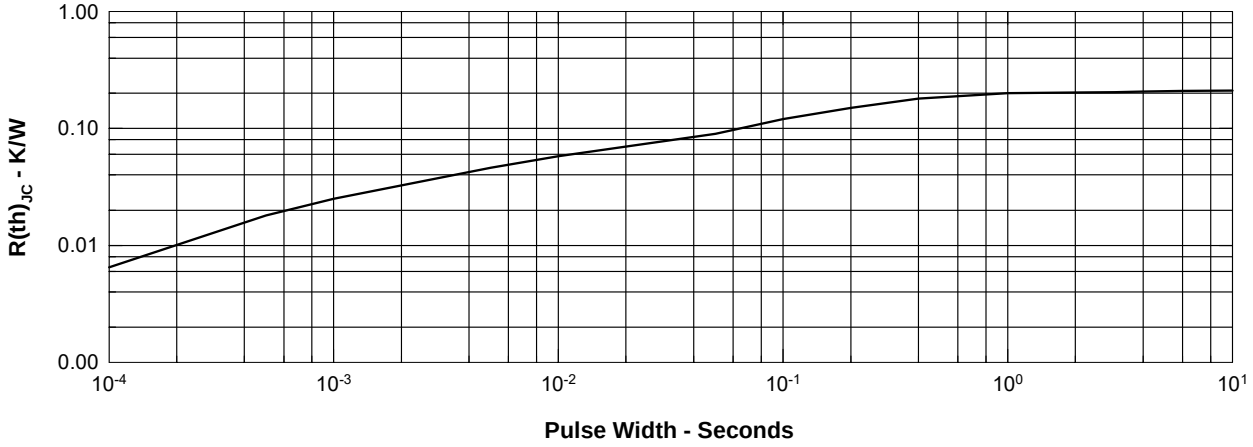

Figure10. Forward Bias Safe Operating Area

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Marking

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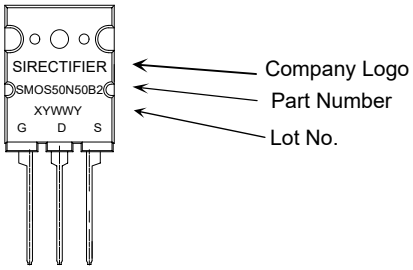

Ordering Information

Part Number	Package	Shipping	Marking Code
SMOS98N50B3	TO-264	20pcs / Tube	SMOS98N50B3

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