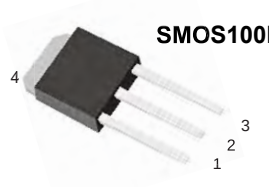
SMOS100N10A3 SMOS100N10A4

N Channel Power MOSFETs

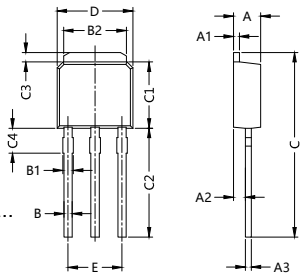


SMOS100N10A3

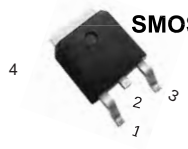
TO-251(IPAK)

1, Gate
2, Drain
3, Source
4, Drain Fin

Dimensions TO-251



Dim.	Millimeter		Dim.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.20	2.40	C	14.50	15.80
A1	0.40	0.60	C1	5.85	6.20
A2	0.70	1.30	C2	7.85	8.60
A3	0.45	0.60	C3	0.60	1.20
B	0.50	0.80	C4	1.75	2.30
B1	0.65	1.00	D	6.30	6.70
B2	5.20	5.50	E	4.40	4.60

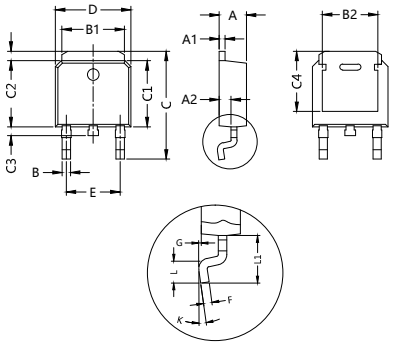


SMOS100N10A4

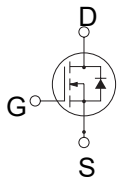
TO-252(DPAK)

1, Gate
2, Drain
3, Source
4, Drain Fin

Dimensions TO-252



Dim.	Millimeter	
	Min.	Max.
A	2.20	2.40
A1	0.40	0.60
A2	0.90	1.25
B	0.60	1.00
B1	5.20	5.50
B2	4.80	5.20
C	9.50	10.20
C1	5.90	6.20
C2	1.00	1.30
C3	0.60	1.00
C4	5.25	5.95
D	6.40	6.70
E	4.40	4.60
F	0.45	0.60
G	0.03	0.23
K	0°	8°
L	1.00	/
L1	2.80	3.25



G=Gate
D=Drain
S=Source

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous(T_C=25°C		I_{D25}	100	A
Drain Current-Continuous(T_C=100°C)		I_{D100}	70	A
Pulsed Drain Current		I_{DM}	265	A
Maximum Power Dissipation	TO-251	P_D	121	W
	TO-252	P_D	120	W
Single pulse avalanche energy (Note 5)		E_{AS}	126	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 175	°C

Thermal Characteristic

Thermal Resistance,Junction-to-Case (TO-251)	Max	$R_{\theta JC}$	1.20	°C/W
Thermal Resistance,Junction-to-Case (TO-252)	Max	$R_{\theta JC}$	1.25	°C/W

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N Channel Power MOSFETs

Electrical Characteristics

(T_J=25°C, unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.2	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{DS}=10V, I_D= 20A	-	5.4	6.6	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=20A	-	110	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=50V,V_{GS}=0V, F=1.0MHz	-	2600	-	PF
Output Capacitance	C_{oss}		-	565	-	PF
Reverse Transfer Capacitance	C_{rss}		-	9.0	-	PF
Gate Resistance	R_g	V_{DS}=0V,V_{GS}=0V, F=1.0MHz	-	1.7	-	Ω
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=75V, I_D =20A V_{GS}=10V,R_G=5.8Ω	-	11	-	nS
Turn-on Rise Time	t_r		-	17.6	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	46	-	nS
Turn-Off Fall Time	t_f		-	34	-	nS
Total Gate Charge	Q_g	V_{DS}=75V, I_D =20A V_{GS}=10V	-	45	-	nC
Gate-Source Charge	Q_{gs}		-	27	-	nC
Gate-Drain Charge	Q_{gd}		-	9.7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V, I_S=1A	-	0.72	1.1	V
Diode Forward Current (Note 2)	I_S	T_J = 25°C, I_F =20A	-	-	120	A
Reverse Recovery Charge	Qrr	di/dt =100A/μs (Note3)		46	-	uC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition : Tj=25℃,VDD=30V,VG=10V,L=0.4mH,Rg=25Ω

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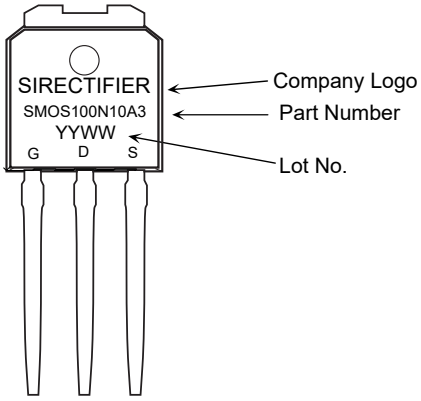
SMOS100N10A3 SMOS100N10A4

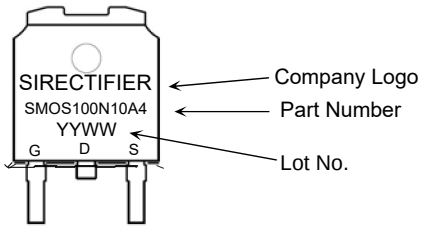
N Channel Power MOSFETs

Marking

SMOS100N10A3
(TO-251)



SMOS100N10A4
(TO-252)



Ordering Information

Part Number	Package	Shipping	Marking Code
SMOS100N10A3	TO-251	50pcs / Tube	SMOS100N10A3
SMOS100N10A4	TO-252	1000pcs / Tape & Reel	SMOS100N10A4

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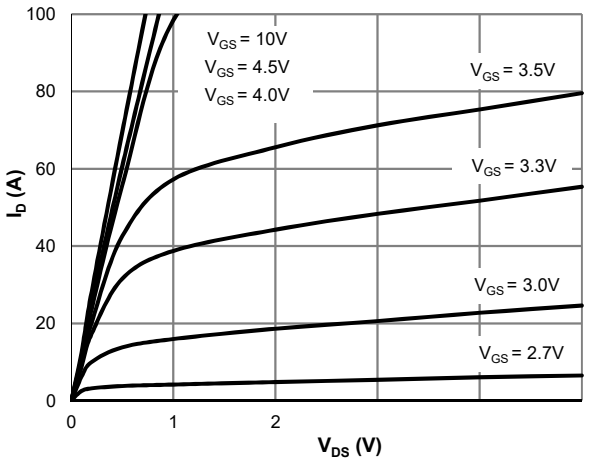


Saturation Characteristics

Figure.1 Typical Output Characteristics

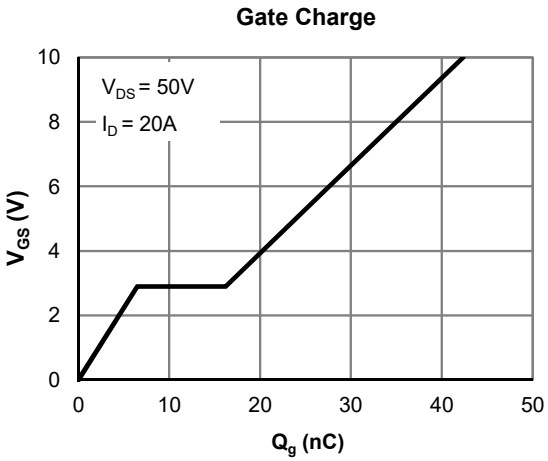
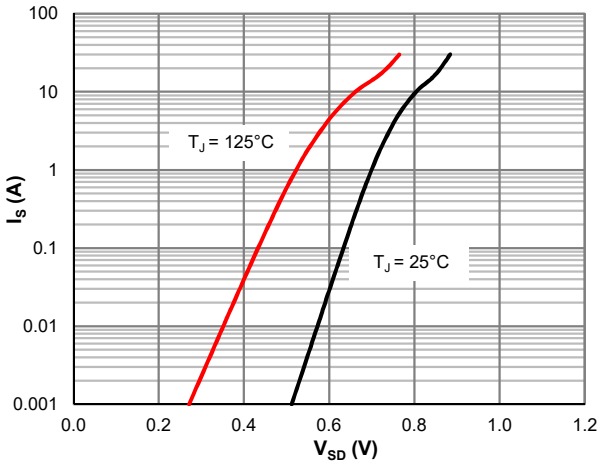
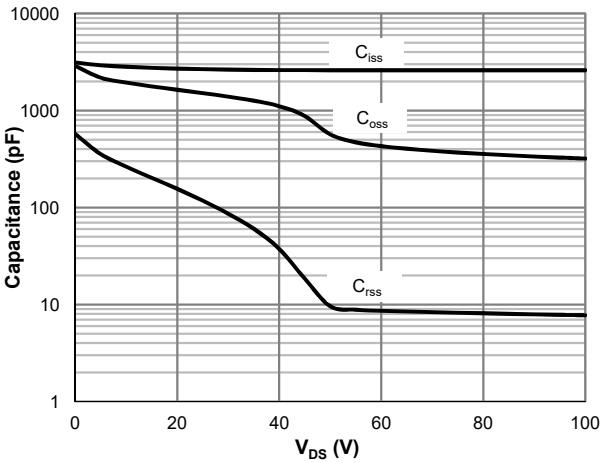


Figure.2 Typical Gate Charge vs Gate to Source Voltage



Body-Diode Characteristics

Figure.3 Typical Body Diode Transfer Characteristics



Capacitance Characteristics

Figure.4 Typical Capacitance vs Drain to Source Voltage

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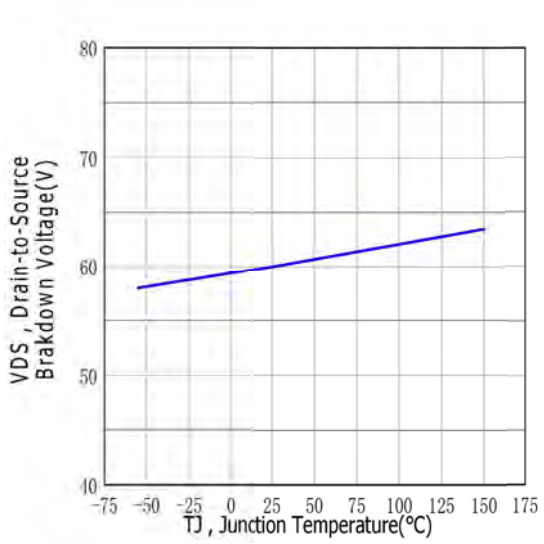

Figure.5 Typical Breakdown Voltage vs Junction Temperature

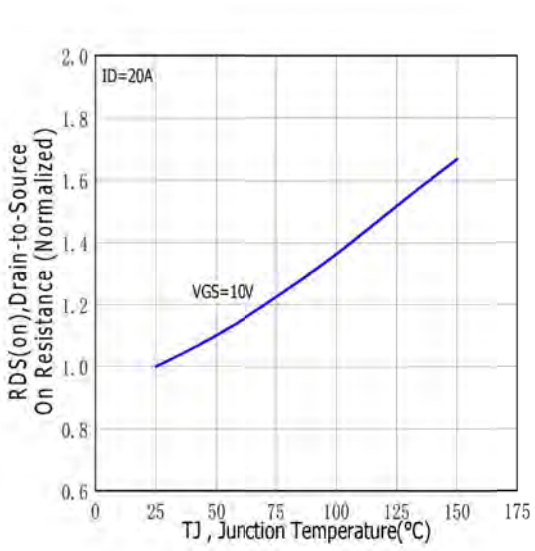

Figure.6 Typical Drain to Source on Resistance vs Junction Temperature

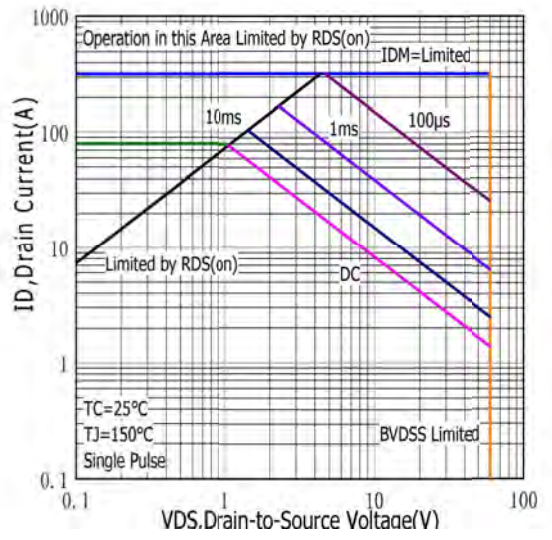

Figure.7 Maximum Forward Bias Safe Operating Area

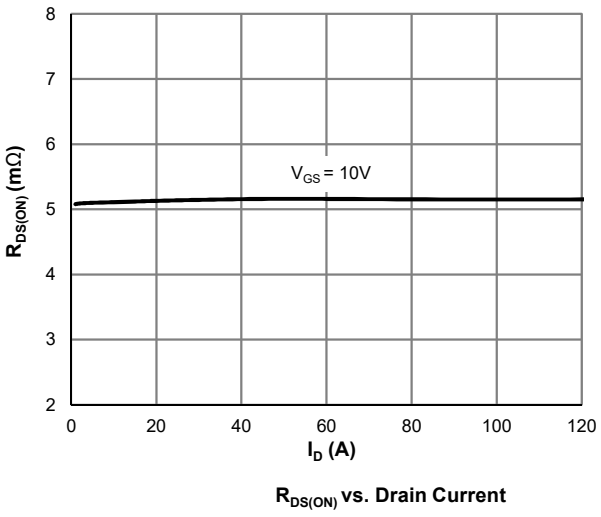

Figure.8 Typical Drain to Source ON Resistance vs Drain Current

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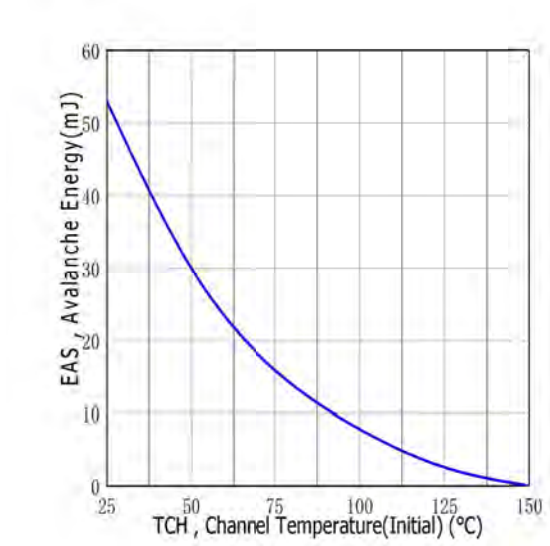

Figure.9 Maximum EAS vs Channel Temperature

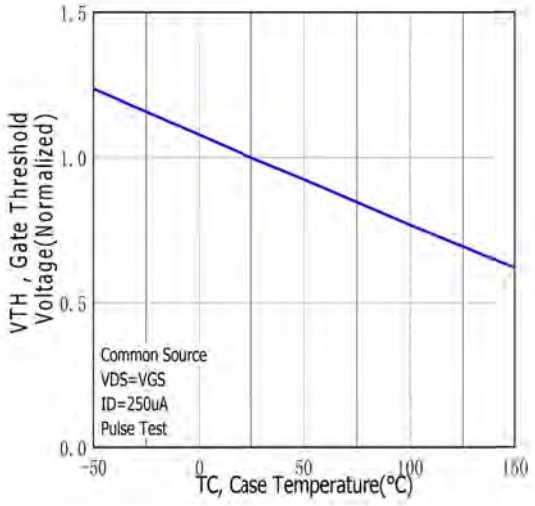

Figure.10 Typical Threshold Voltage vs Case Temperature

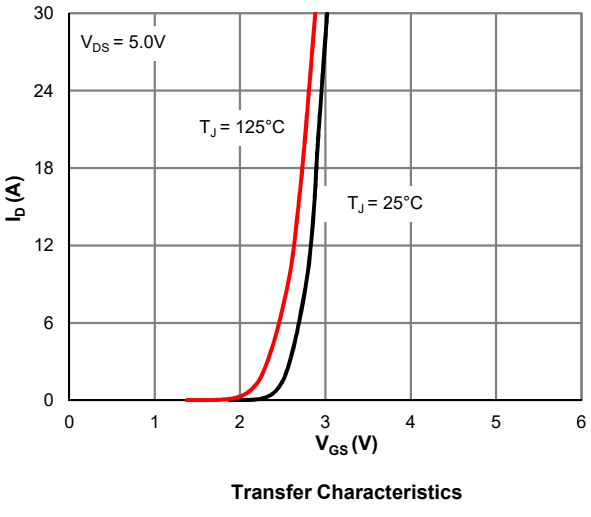

Figure.11 Typical Transfer Characteristics

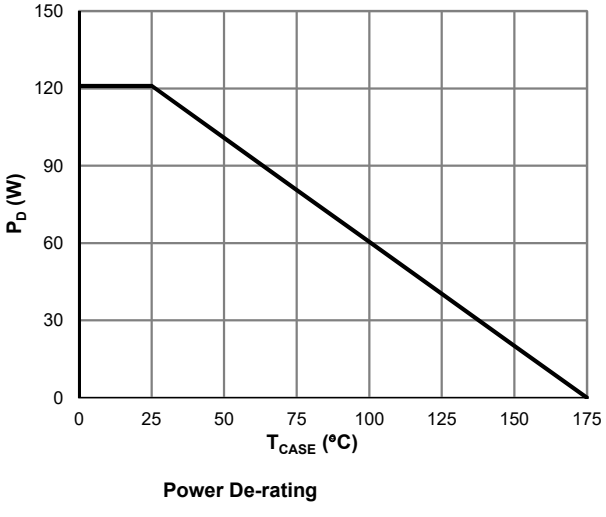

Figure.12 Maximum Power Dissipation vs Case Temperature

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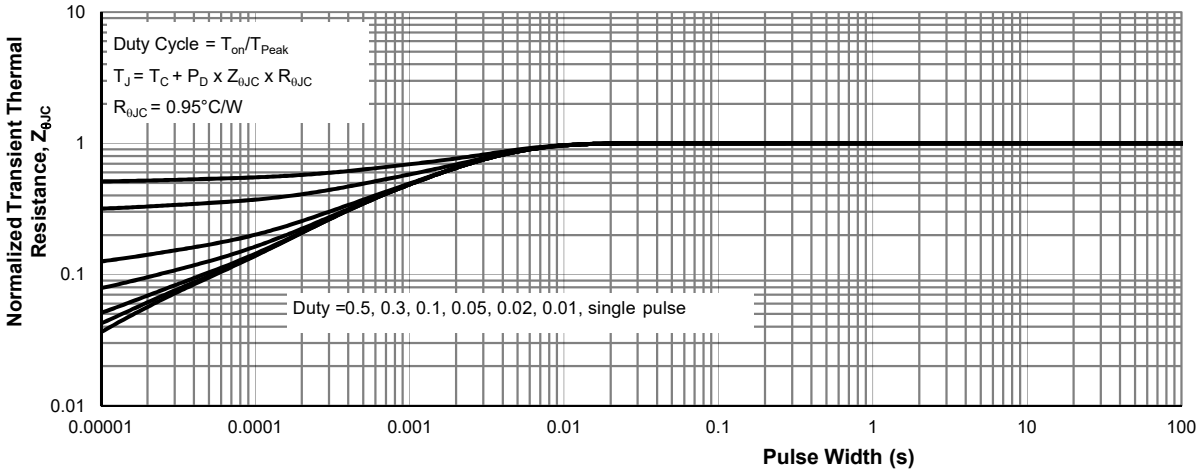

Normalized Maximum Transient Thermal Impedance

Figure.13 Maximum Effective Thermal Impedance , Junction to Case

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