

**SE7N60**  
**7A,600V N-Channel MOSFET**

Revision:A

**General Description**

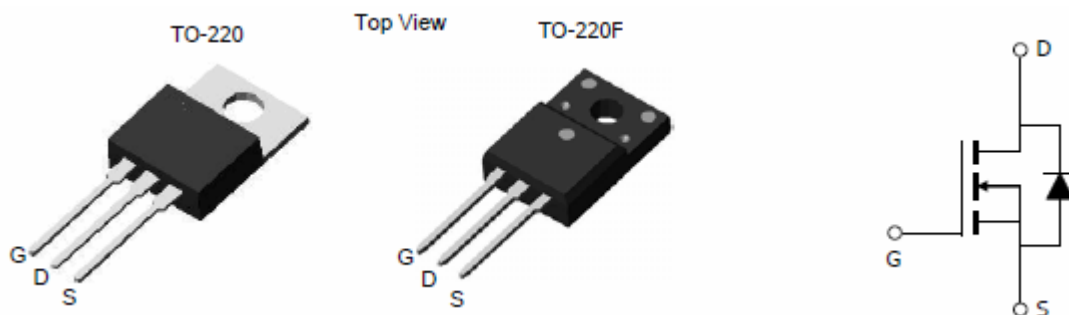
The MOSFETs from SINO-IC provide the best combination of fast switching, low on-resistance and cost-effectiveness.

**Features**

- $V_{DS}$  (V) = 700V @150°C
- $I_D$  = 7A
- $R_{DS(ON)} < 1.2 \Omega$  ( $V_{GS} = 10V$ )

**Pin configurations**

See Diagram below



**Absolute Maximum Ratings**

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	600	V
Gate-Source Voltage	$V_{GS}$	±30	V
Drain Current (Note 1)	Continuous	7	A
	Pulsed	28	
Total Power Dissipation	$P_D$	176	W
Operating Junction Temperature Range	$T_J$	-50 to 150	°C

**Thermal Characteristics**

Parameter	Symbol	Typ	Max	Units	
Maximum Junction-to-Ambient $A$	$t \leq 10s$	$R_{\theta JA}$	65	-	°C/W
Maximum Case-to-Sink	Steady-State	$R_{\theta CS}$	0.5	-	°C/W
Maximum Junction-to-- Case	Steady-State	$R_{\theta JC}$	0.71	-	°C/W

# SE7N60

Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>OFF/ON CHARACTERISTICS (Note 2)</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =250 μ A, V <sub>GS</sub> =0 V	600			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =600 V, V <sub>GS</sub> =0 V			1	μ A
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0 V, V <sub>GS</sub> =±30 V			100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250 μ A	3	3.9	5	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A	-	1	1.2	Ω
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =40V, I <sub>D</sub> =3.5A	-	12	-	S
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz	685	861	1035	pF
C <sub>oss</sub>	Output Capacitance		65	84	100	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		5.2	6.6	7.9	pF
t <sub>ON</sub>	Turn-On Time	V <sub>DS</sub> =300V, I <sub>D</sub> = 7A, V <sub>GS</sub> = 10 V, R <sub>GEN</sub> =25 Ω	-	25	-	ns
t <sub>OFF</sub>	Turn-Off Time		-	51.5	-	ns
T <sub>r</sub>	Turn-on Rise Time		-	49.5	-	ns
T <sub>f</sub>	Turn-on Fall Time		-	43.5	-	ns
Q <sub>g(10)</sub>	Total Gate Charge	V <sub>DS</sub> =480V, I <sub>D</sub> =7A, V <sub>GS</sub> =10V	19.3	23.2	27.8	nC
Q <sub>gs</sub>	Gate-Source Charge		3.8	4.6	5.5	nC
Q <sub>gd</sub>	Gate-Drain Charge		9.3	11.2	13.5	nC
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =7A, dI/dt=100A/ μ s	212	255	306	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =7A, dI/dt=100A/ μ s	2	2.6	3.1	uC

# Typical Characteristics

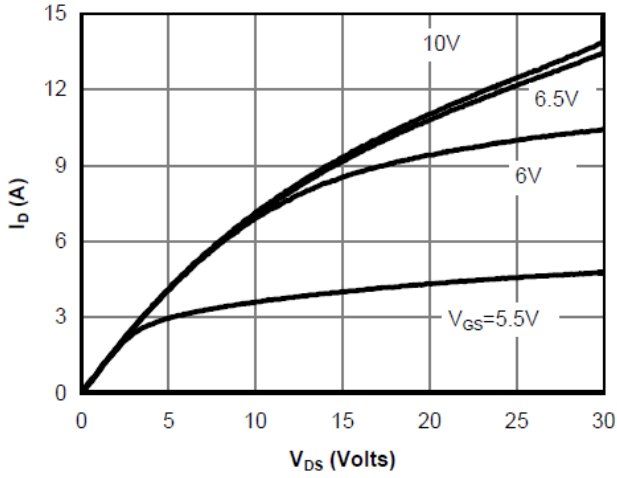


Fig 1: On-Region Characteristics

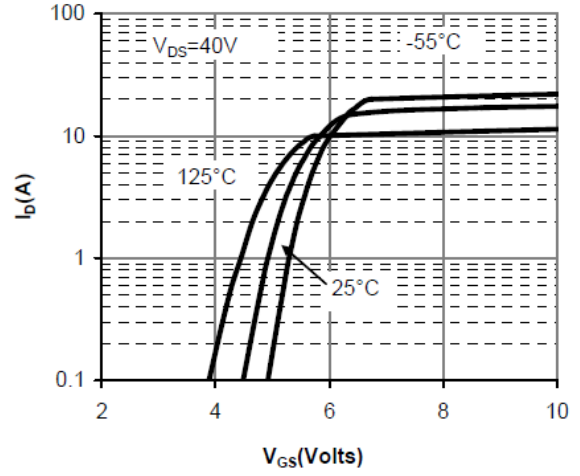


Figure 2: Transfer Characteristics

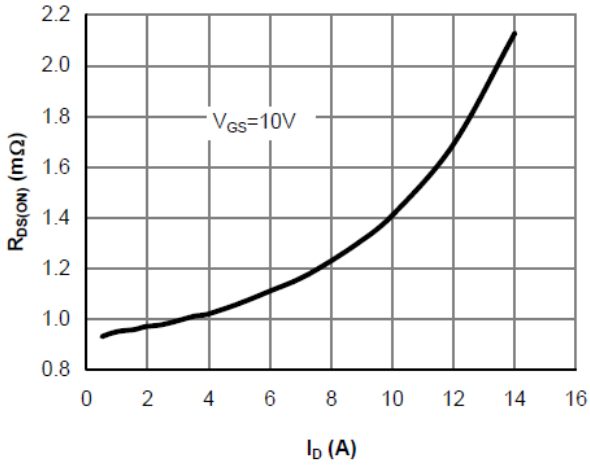


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

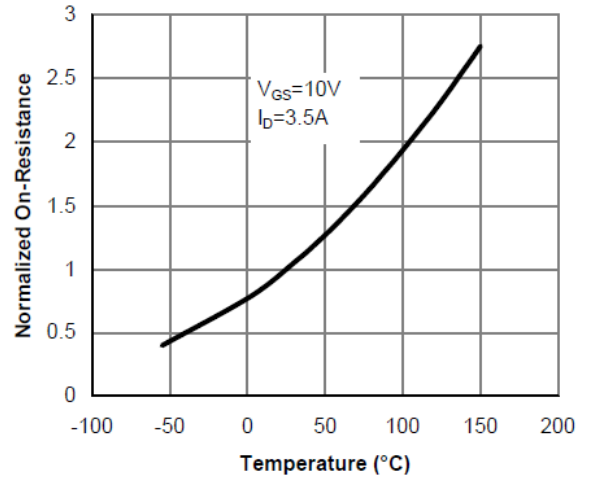


Figure 4: On-Resistance vs. Junction Temperature

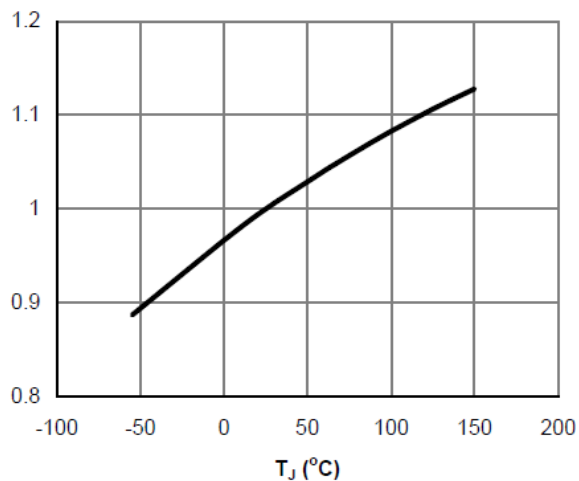


Figure 5: Break Down vs. Junction Temperature

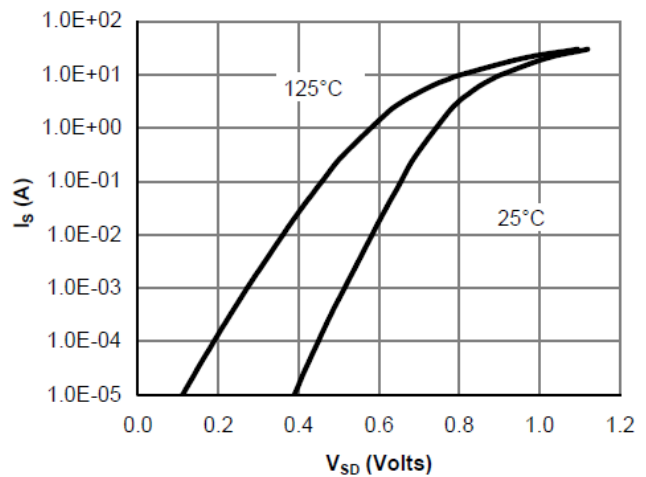


Figure 6: Body-Diode Characteristics

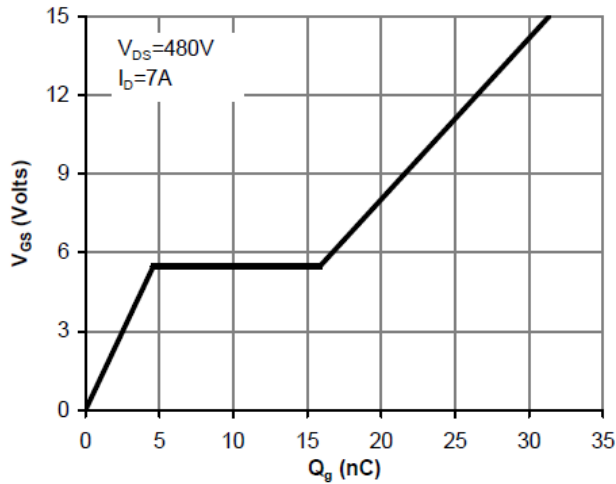


Figure 7: Gate-Charge Characteristics

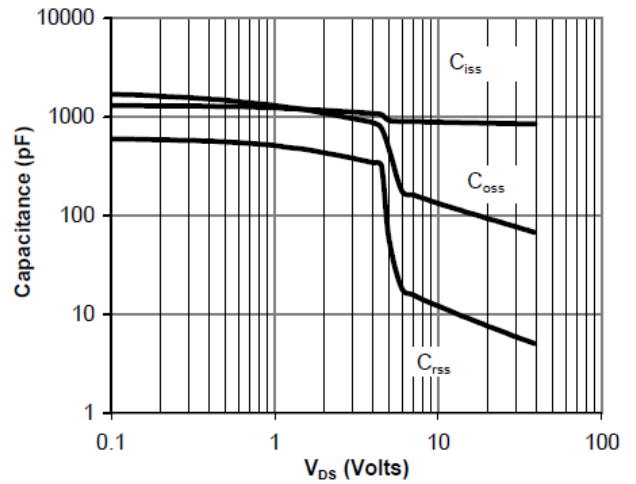


Figure 8: Capacitance Characteristics

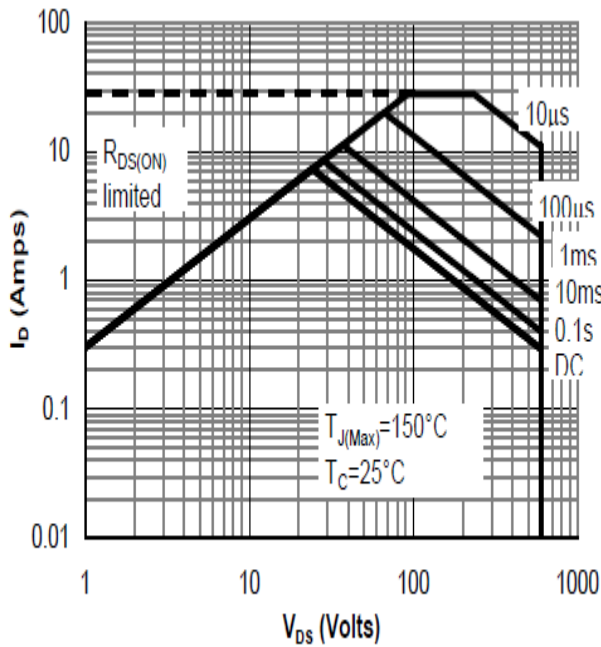


Figure 9: Maximum Forward Biased Safe Operating

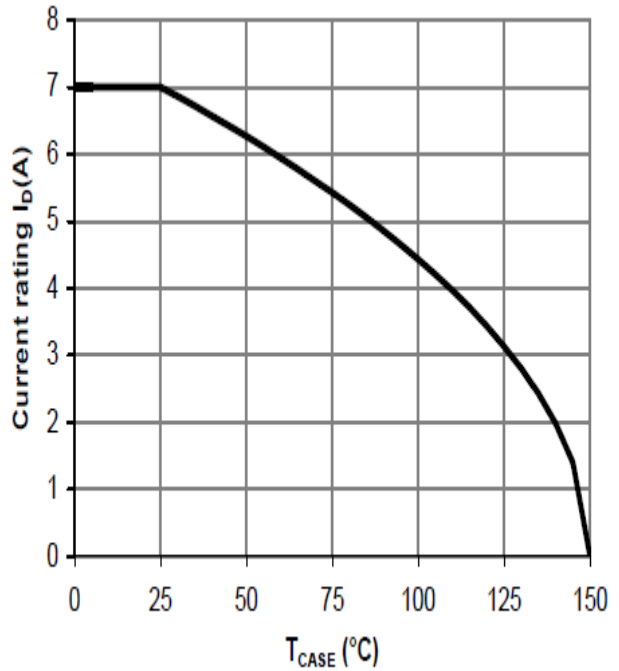


Figure 11: Current De-rating (Note B)

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