

SE1N60
1.3A,600V N-Channel MOSFET

Revision:A

General Description

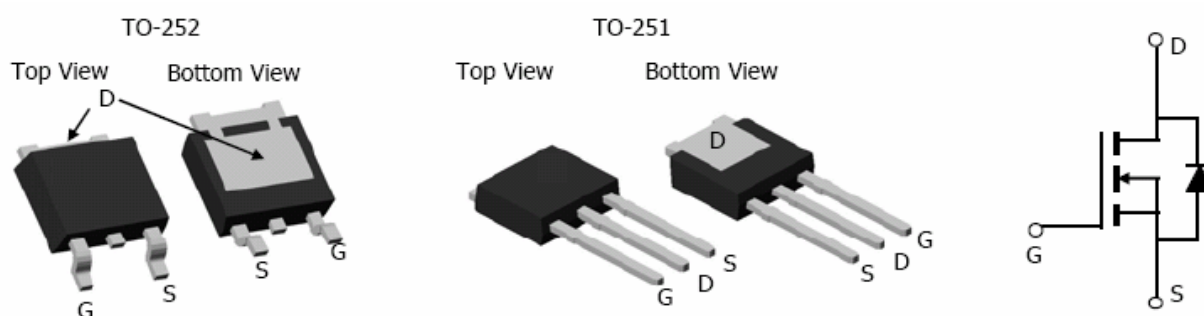
The MOSFETs from SINO-IC provide the best combination of fast switching, low on-resistance and cost-effectiveness.

Features

- V_{DS} (V) = 600V
- I_D = 1.3A
- $R_{DS(ON)} < 9 \Omega$ ($V_{GS} = 10V$)

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	I_D	1.3	A
	Pulsed		4	
Total Power Dissipation		P_D	45	W
Operating Junction Temperature Range		T_J	-50 to 150	$^{\circ}C$

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient A	$t \leq 10s$	$R_{\theta JA}$	45	55	$^{\circ}C/W$
Maximum Case-to-Sink	Steady-State	$R_{\theta CS}$	-	0.5	$^{\circ}C/W$
Maximum Junction-to-- Case	Steady-State	$R_{\theta JC}$	2.3	2.8	$^{\circ}C/W$

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Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF/ON CHARACTERISTICS (Note 2)						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250 μ A, V _{GS} =0 V	600			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =600 V, V _{GS} =0 V			1	μ A
I _{GSS}	Gate-Body leakage current	V _{DS} =0 V, V _{GS} =±30 V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =250 μ A	3	4.1	5	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =0.65A	-	7.5	9	Ω
g _{FS}	Forward Transconductance	V _{DS} =40V, I _D =0.65A	-	0.9	-	S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, f=1MHz	105	130	160	pF
C _{oss}	Output Capacitance		12	14.5	17.5	pF
C _{rss}	Reverse Transfer Capacitance		1.5	1.8	2.2	pF
t _{ON}	Turn-On Time	V _{DS} =300V, I _D = 1A, V _{GS} = 10 V, R _{GEN} =25 Ω	-	10	13	ns
t _{OFF}	Turn-Off Time		-	20	26	ns
t _r	Turn-on Rise Time		-	6.7	13	ns
t _f	Turn-on Fall Time		-	11.5	23	ns
Q _{g(10)}	Total Gate Charge	V _{DS} =480V, I _D =1A, V _{GS} =10V		6.1	8	nC
Q _{gs}	Gate-Source Charge			1.3	2	nC
Q _{gd}	Gate-Drain Charge			3.1	4	nC
t _{rr}	Body Diode Reverse Recovery Time	I _F =1.3A, dI/dt=100A/ μ s		114	137	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =1.3A, dI/dt=100A/ μ s		0.63	0.76	uC

Typical Characteristics

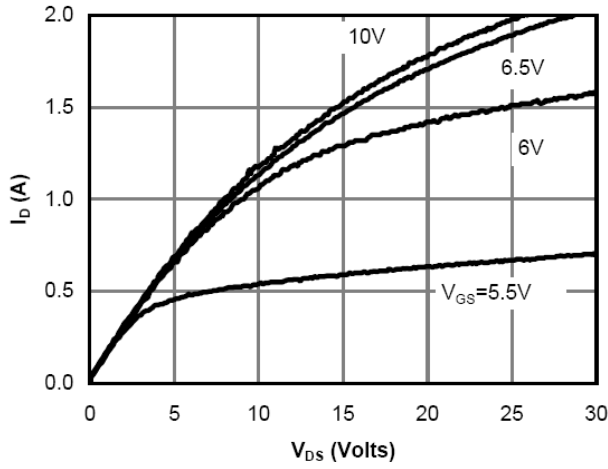


Fig 1: On-Region Characteristics

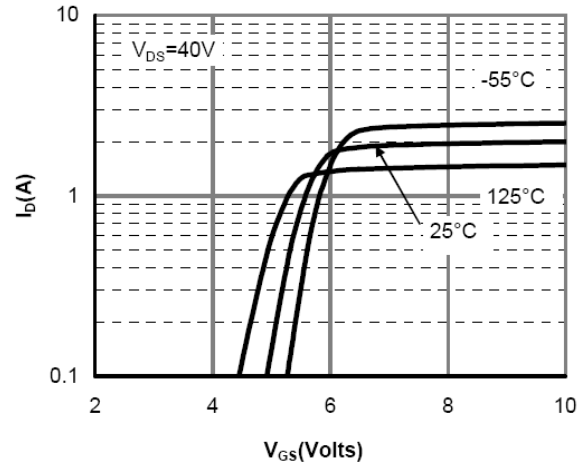


Figure 2: Transfer Characteristics

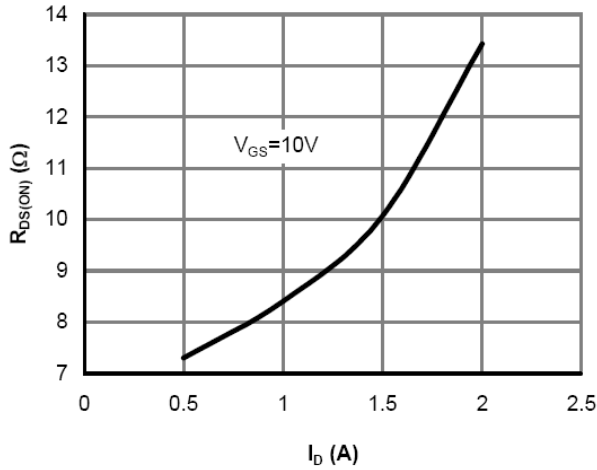


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

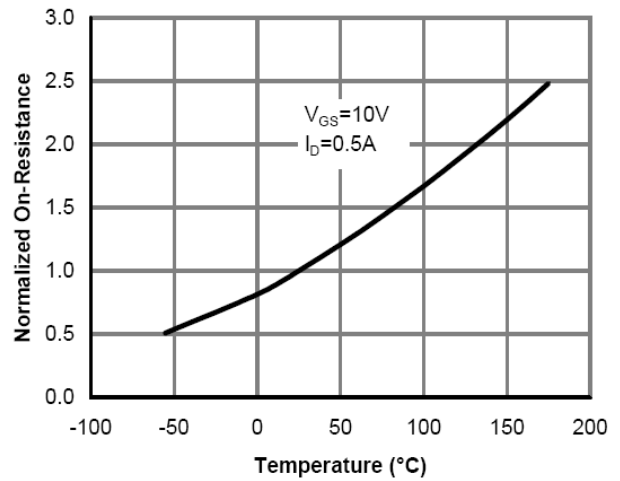


Figure 4: On-Resistance vs. Junction Temperature

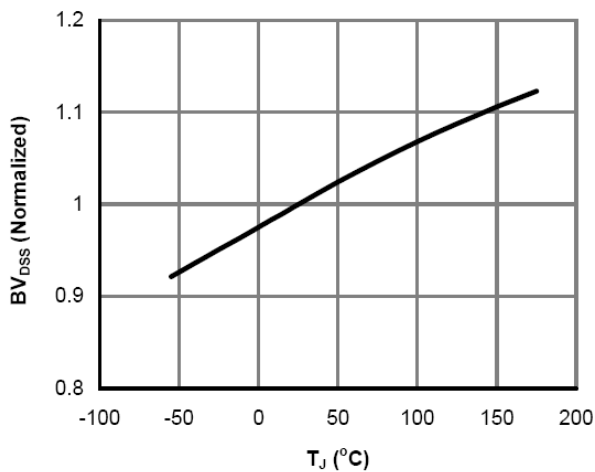


Figure 5: Break Down vs. Junction Temperature

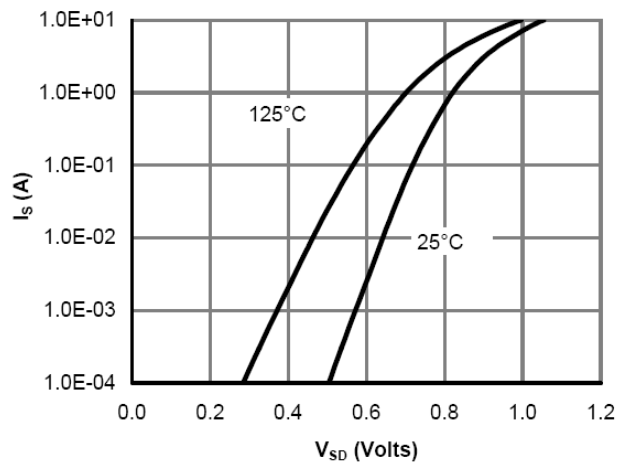


Figure 6: Body-Diode Characteristics

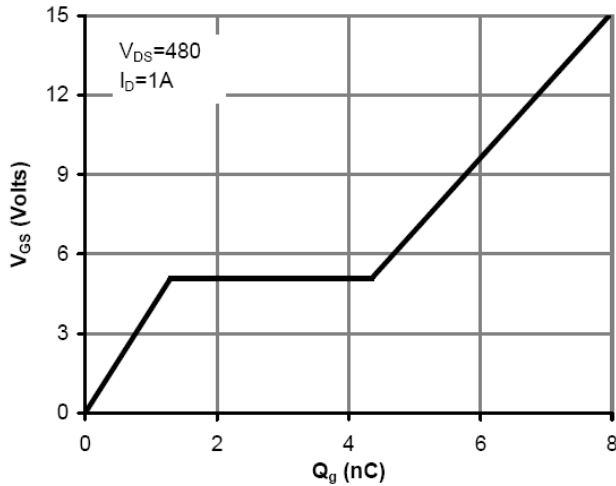


Figure 7: Gate-Charge Characteristics

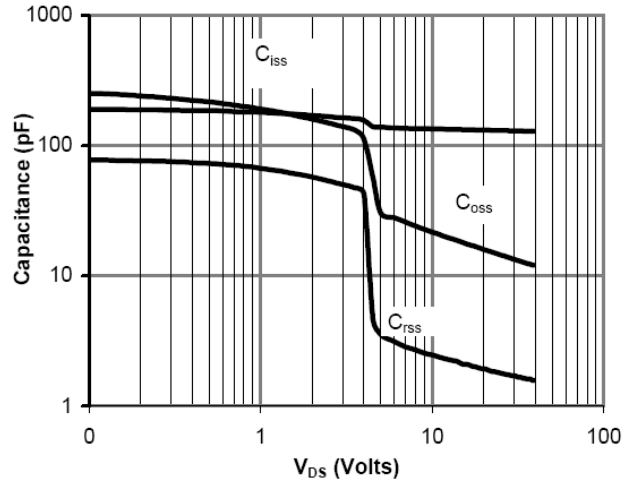


Figure 8: Capacitance Characteristics

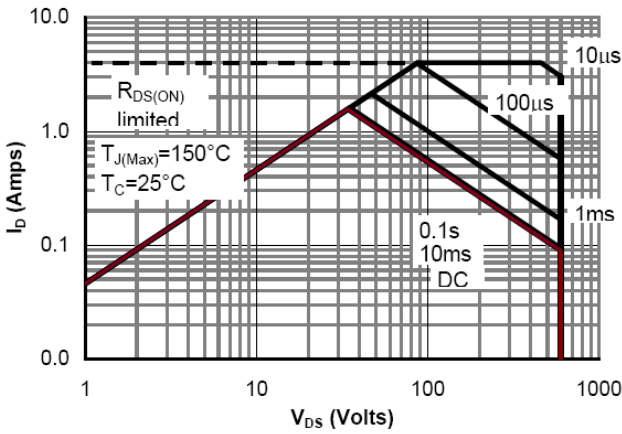


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

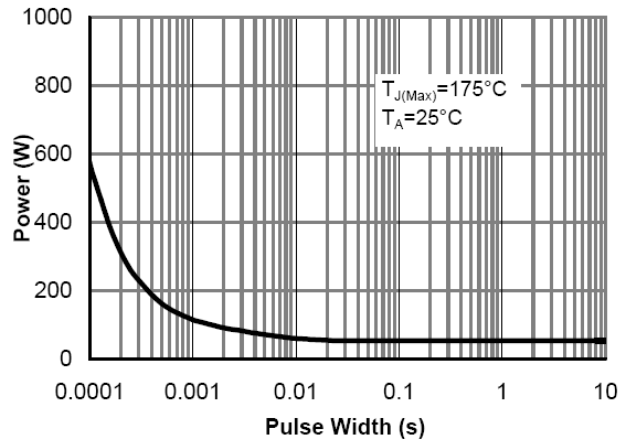


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

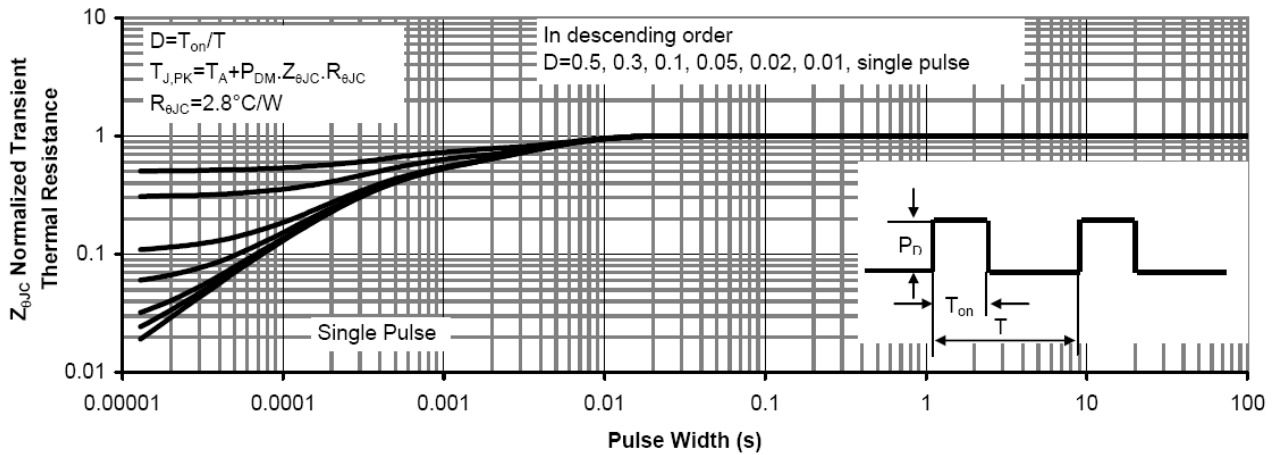


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

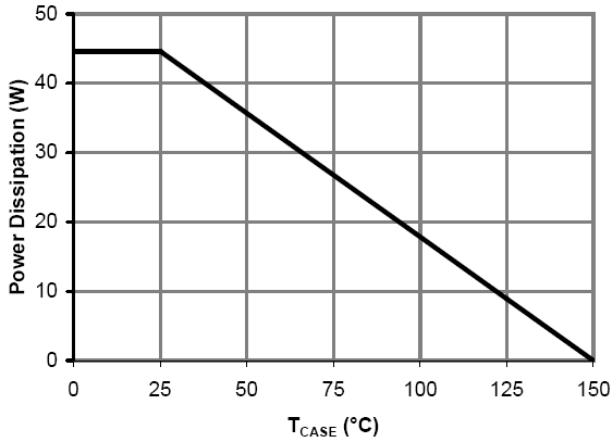


Figure 12: Power De-rating (Note B)

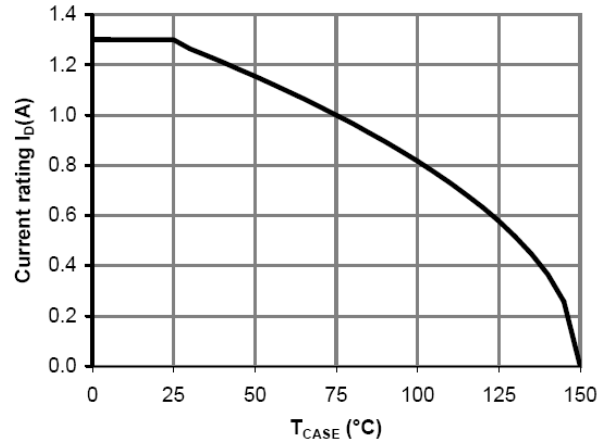


Figure 13: Current De-rating (Note B)

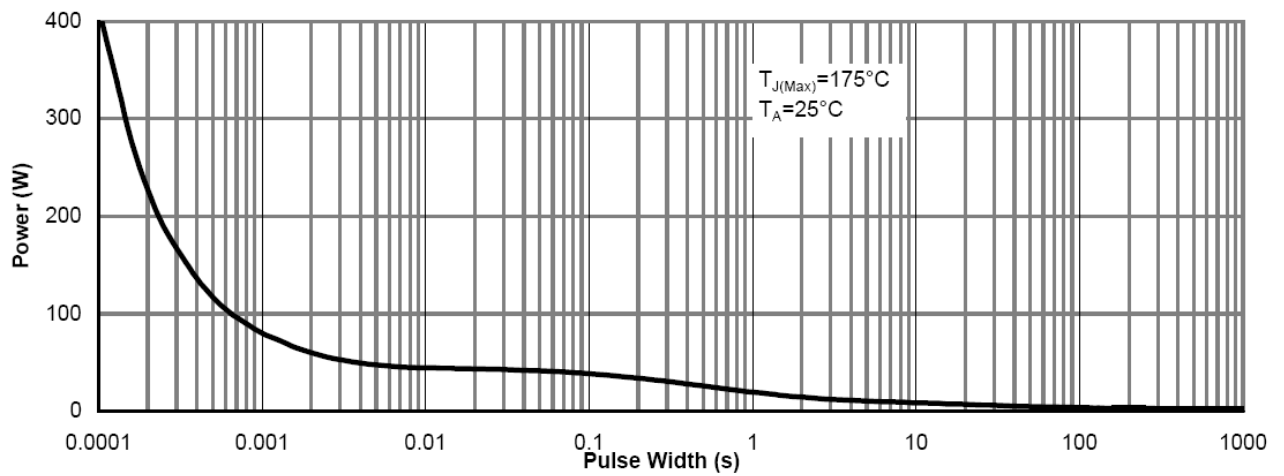


Figure 14: Single Pulse Power Rating Junction-to-Case (Note G)

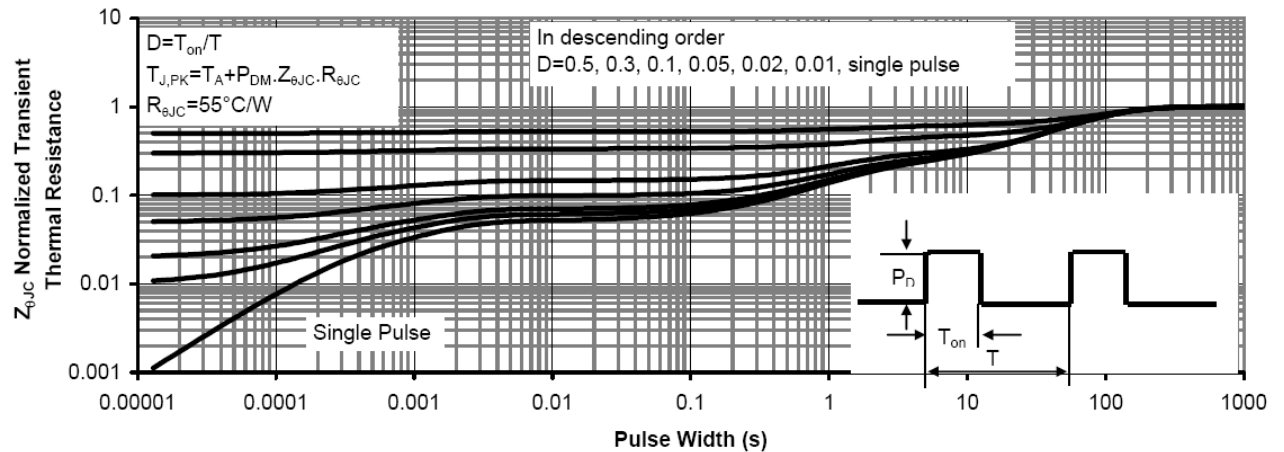


Figure 15: Normalized Maximum Transient Thermal Impedance (Note G)

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