

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	7.5mΩ@10V	68A
	10mΩ@4.5V	



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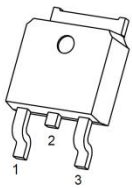
Feature

- Low RDS(on) & FOM
- Extremely low switching loss
- Excellent reliability and uniformity
- Fast switching and soft recovery

Application

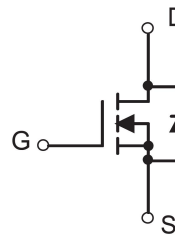
- PD charger
- Motor driver
- Switching voltage regulator
- DC-DC convertor
- Switched mode power supply

Package

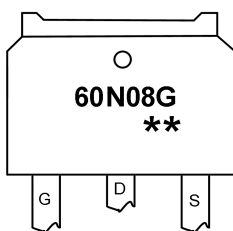


TO-252-2L(G:1 D:2 S:3)

Circuit diagram



Marking



60N08G =Device Code
** =Week Code

Order Information

Device	Package	Unite/Tape
SP60N08GTH	TO-252	2500

Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current ¹⁾ , TC=25 °C	I_D	68	A
Pulsed drain current ²⁾ , TC=25 °C	$I_{D, pulse}$	204	A
Power dissipation ³⁾ , TC=25 °C	P_D	81	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	109	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	1.54	°C/W
Thermal resistance, junction-ambient ⁴⁾	$R_{\theta JA}$	62	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

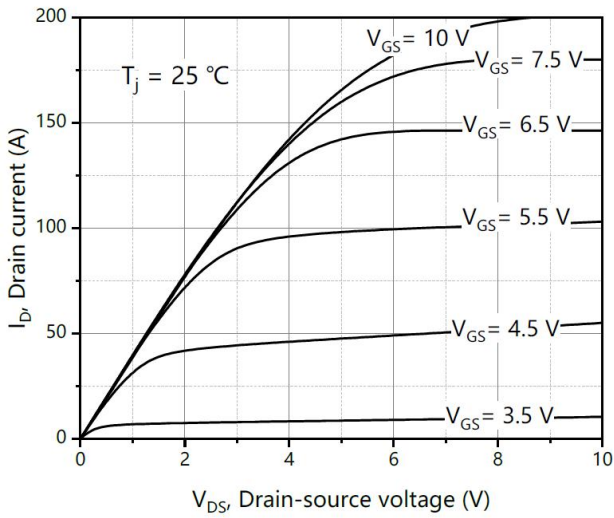
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit	
Static Characteristics							
Drain-source breakdown voltage	BV_{DSS}	VGS=0 V, ID=250 μA	60			V	
Gate-source leakage current	I_{GSS}	VGS=±20 V			±100	nA	
Drain-source leakage current	I_{DSS}	VDS=60 V, VGS=0 V			1	μA	
Gate threshold voltage	$V_{GS(th)}$	VDS=VGS, ID=250 μA	1		2.5	V	
Drain-source on-state resistance	$R_{DS(on)}$	VGS=10 V, ID=20 A		7.5	10	mΩ	
		VGS=4.5V, ID=10 A		10	13		
Dynamic Characteristics							
Input capacitance	C_{iss}	VGS=0 V, VDS=50 V, f=100 kHz		1110		pF	
Output capacitance	C_{oss}			350			
Reverse transfer capacitance	C_{rss}			12			
Total gate charge	Q_g	VGS=10 V, VDS=50 V, ID=25 A		18.3		nC	
Gate-source charge	Q_{gs}			3.8			
Gate-drain charge	Q_{gd}			3.2			
Switching Characteristics							
Turn-on delay time	$t_{d(on)}$	VGS=10 V, VDS=50 V, RG=2 Ω, ID=25 A		23.9		ns	
Rise time	t_r			4.6			
Turn-off delay time	$t_{d(off)}$			37.8			
Fall time	t_f			6.4			
Body Diode Characteristics							
Diode forward voltage	V_{SD}	IS=20 A, VGS=0 V			1.3	V	
Reverse recovery time	t_{rr}	VR=50 V, IS=25 A, di/dt=100 A/μs		42.6		ns	
Reverse recovery charge	Q_{rr}				36.3		nC
Peak reverse recovery current	I_{rrm}				1.4		A

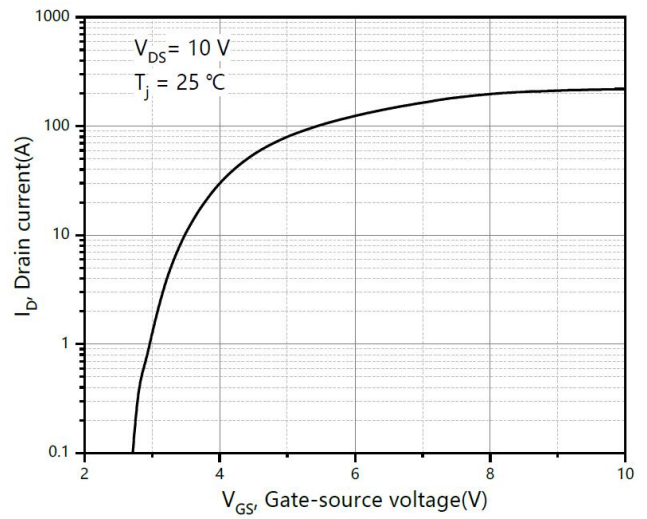
Note:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Pd is based on max. junction temperature, using junction-case thermal resistance.
4. The value of R_{θJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 °C.
5. VDD=30 V, VGS=10 V, L=0.3 mH, starting Tj=25 °C.

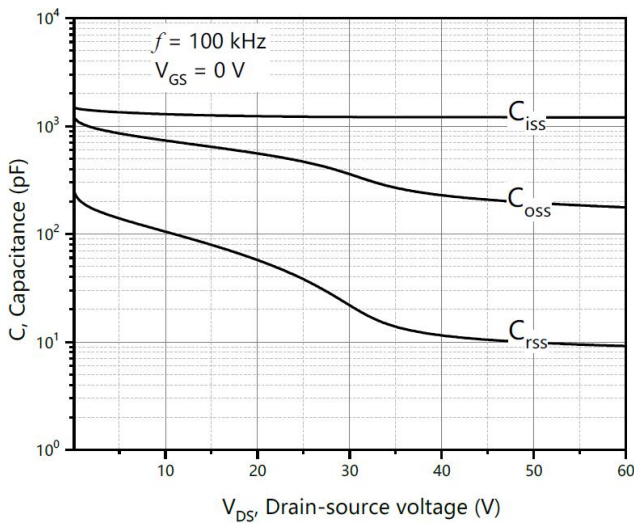
Typical Characteristics



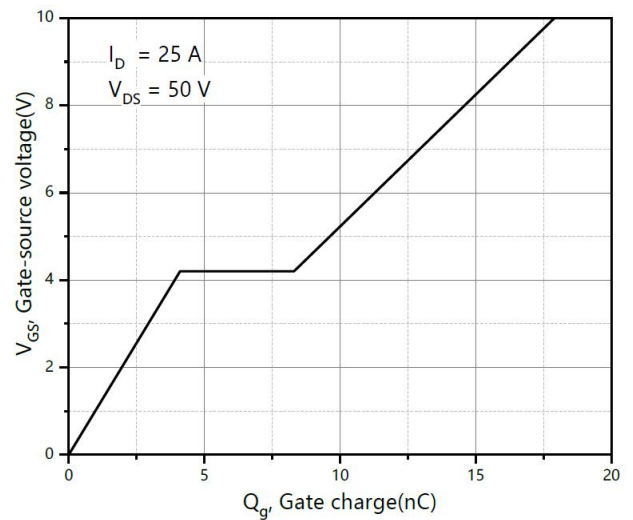
Output characteristics



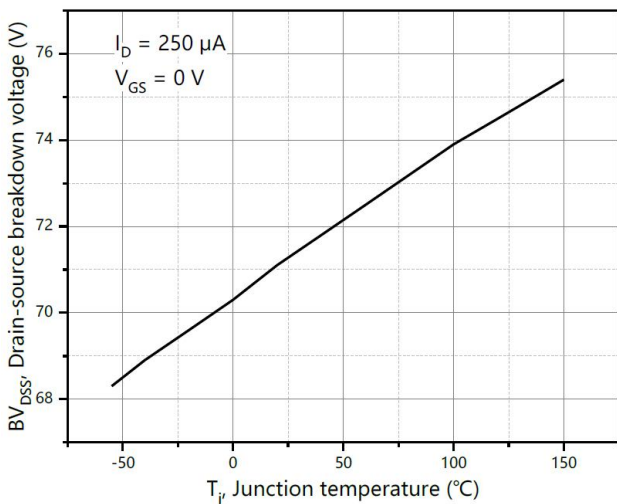
Transfer characteristics



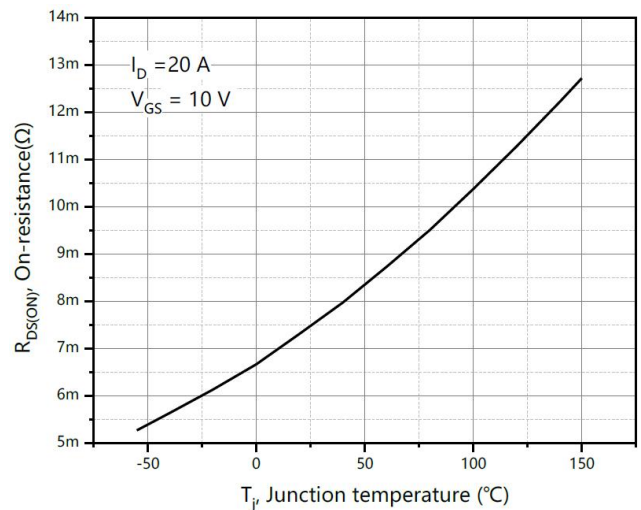
Capacitances



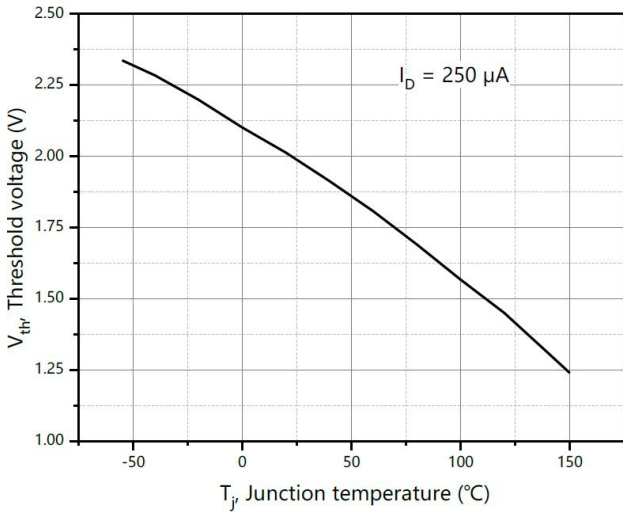
Gate charge



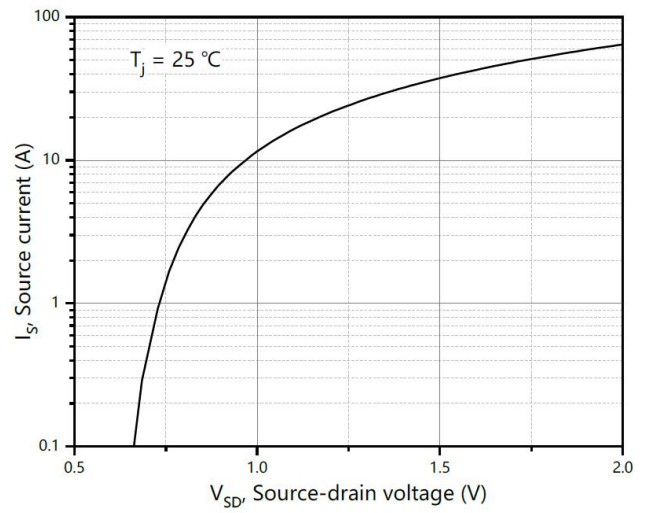
Drain-source breakdown voltage



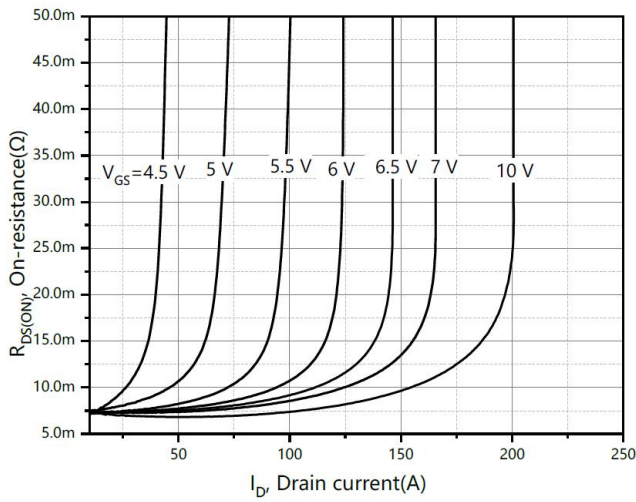
Drain-source on-state resistance



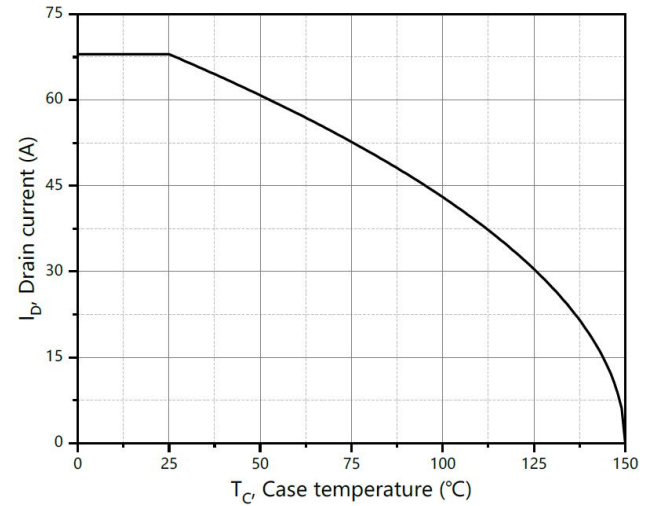
Threshold voltage



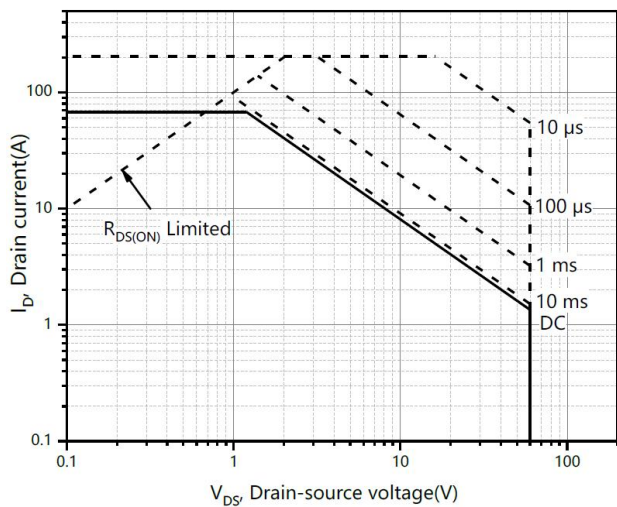
Forward characteristic of body diode



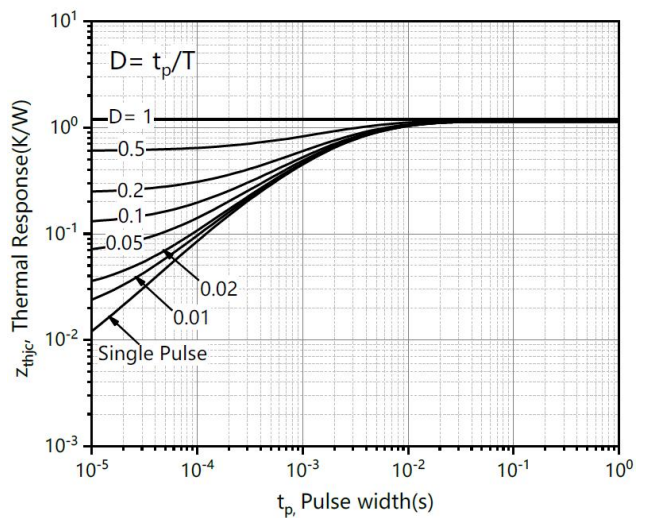
Drain-source on-state resistance



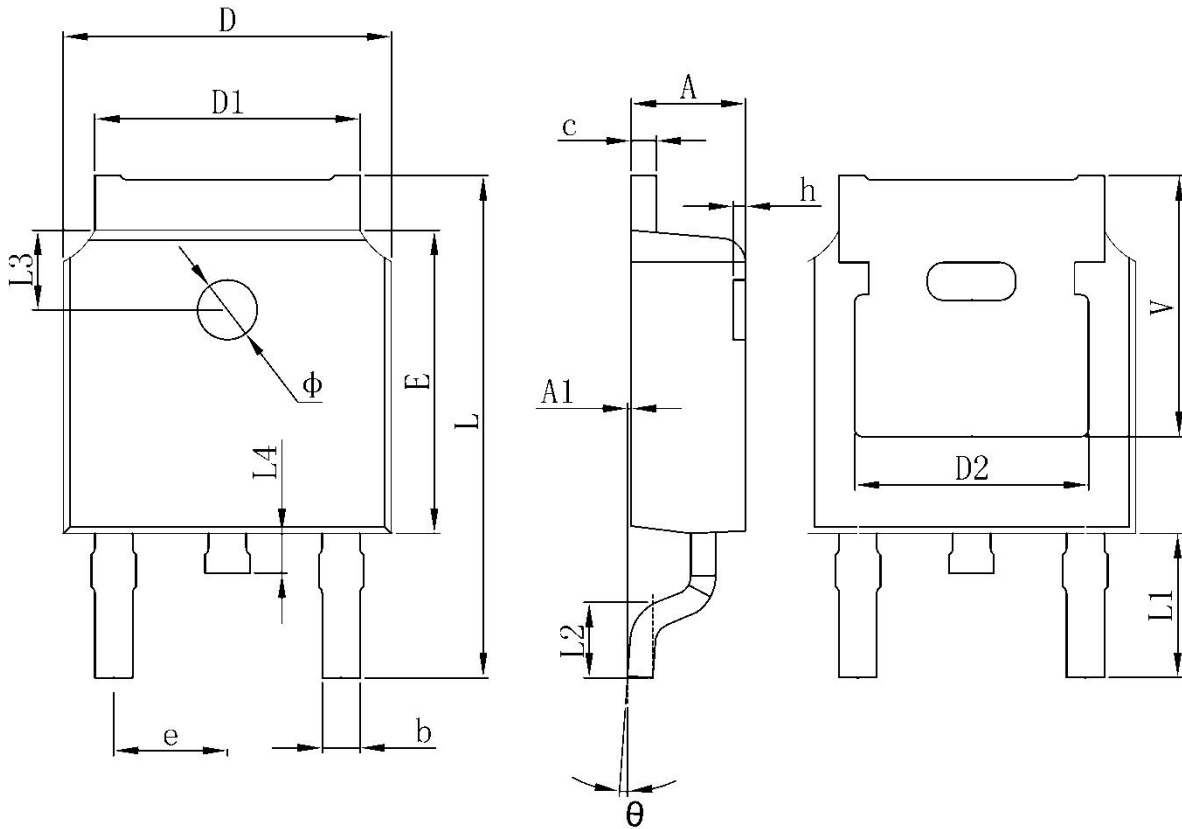
Drain current



Safe operation area $T_c=25\text{ }^\circ\text{C}$



Max. transient thermal impedance

TO-252 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

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