

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
60V	5.5mΩ@10V	18A
	8.5mΩ@4.5V	

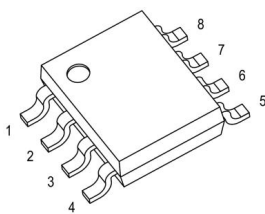
### Feature

- Fast Switching
- Low Gate Charge and R<sub>DS(on)</sub>
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

### Applications

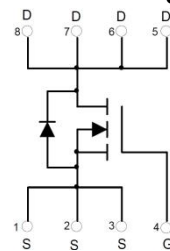
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

### Package

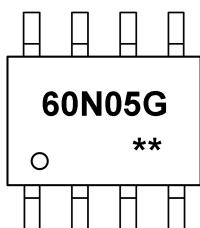


SOP-8L

### Circuit diagram



### Marking



**60N05G** : Product code  
**\*\*** : Week code.

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

Parameter	Symbol	Value	Unit
Drain source voltage	$V_{DS}$	60	V
Gate source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current	$I_D$	18	A
Pulsed Drain Current	$I_{DM}$	72	A
Maximum Power Dissipation	$P_D$	1.5	W
Thermal resistance, junction-case	$R_{\theta JC}$	80	°C/W
Thermal resistance, junction-ambient <sup>4)</sup>	$R_{\theta JA}$	24	°C/W
Operation and storage temperature	$T_{stg}, T_j$	-55 to 150	°C

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

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
<b>Static</b>						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS}=0\text{ V}, I_D=250\ \mu\text{A}$	60			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\ \mu\text{A}$	1	1.7	2.5	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10\text{ V}, I_D=8\text{ A}$		5.5	6.9	mΩ
		$V_{GS}=4.5\text{ V}, I_D=6\text{ A}$		8.5	11.5	mΩ
Gate-source leakage current	$I_{GSS}$	$V_{GS}=\pm 20\text{ V}$			$\pm 100$	nA
Drain-source leakage current	$I_{DSS}$	$V_{DS}=60\text{ V}, V_{GS}=0\text{ V}$			1	μA
Gate Resistance	$R_g$	$f=1\text{MHz}, \text{Open drain}$		2.8		Ω
<b>Dynamic</b>						
Input capacitance	$C_{iss}$	$V_{GS}=0\text{ V}, V_{DS}=50\text{ V}, f=100\text{ kHz}$		2136		pF
Output capacitance	$C_{oss}$			331.5		
Reverse transfer capacitance	$C_{rss}$			10.6		
Turn-on delay time	$t_{d(on)}$	$V_{GS}=10\text{ V}, V_{DS}=50\text{ V}, R_G=2\ \Omega,$ $I_D=25\text{ A}$		22.9		ns
Rise time	$t_r$			6.5		
Turn-off delay time	$t_{d(off)}$			45.7		
Fall time	$t_f$			20.4		
<b>Gate Charge Characteristics</b>						
Total gate charge	$Q_g$	$I_D=25\text{ A}, V_{DS}=50\text{ V}, V_{GS}=10\text{ V}$		30		nC
Gate-source charge	$Q_{gs}$			5.8		
Gate-drain charge	$Q_{gd}$			6.1		
Gate plateau voltage	$V_{plateau}$			3.6		V
<b>Body Diode Characteristics</b>						
Diode forward voltage	$V_{SD}$	$I_S=1\text{ A}, V_{GS}=0\text{ V}$			1.2	V

**Typical Characteristics**

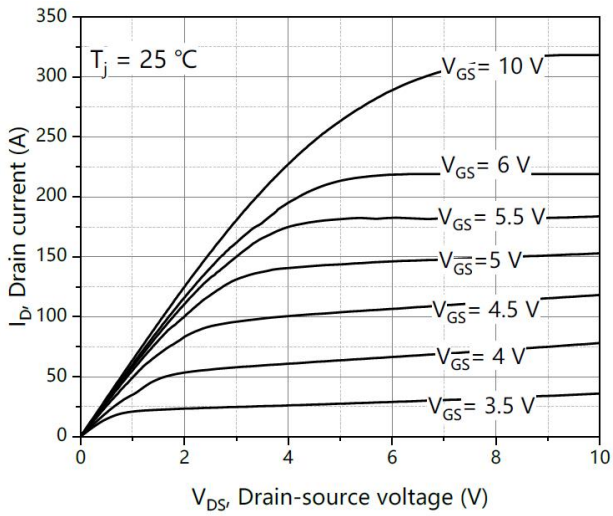


Figure 1, Typ. output characteristics

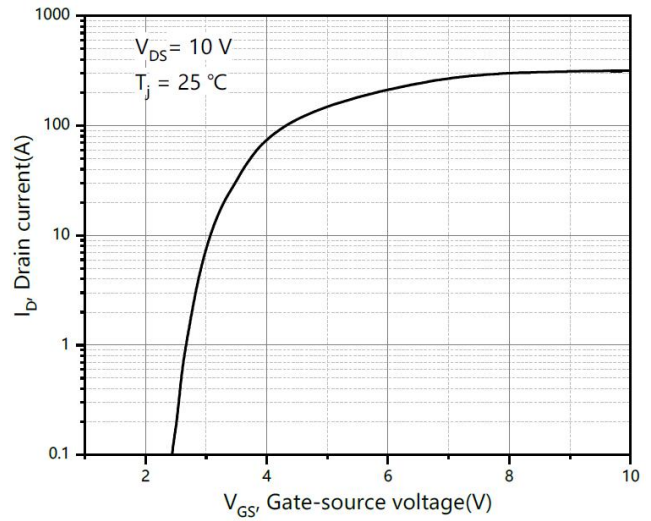


Figure 2, Typ. transfer characteristics

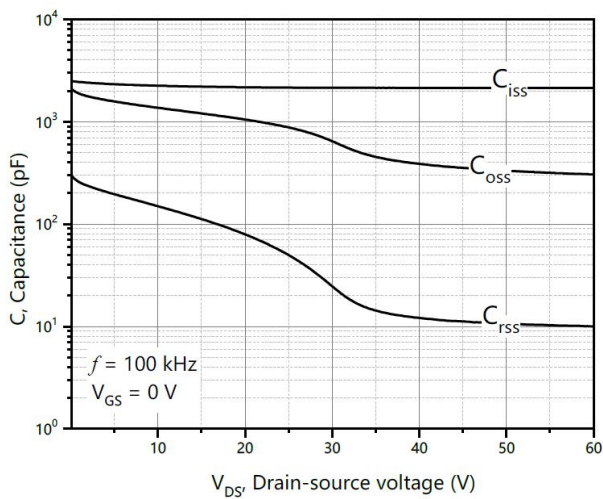


Figure 3, Typ. capacitances

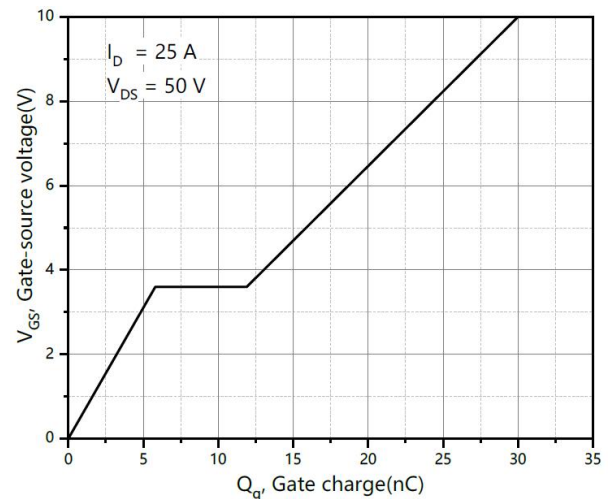


Figure 4, Typ. gate charge

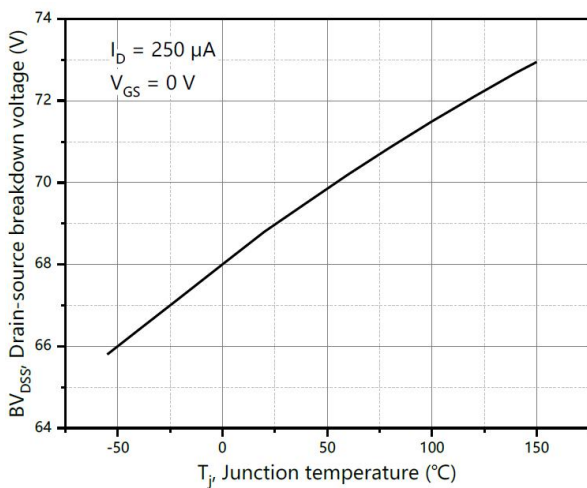


Figure 5, Drain-source breakdown voltage

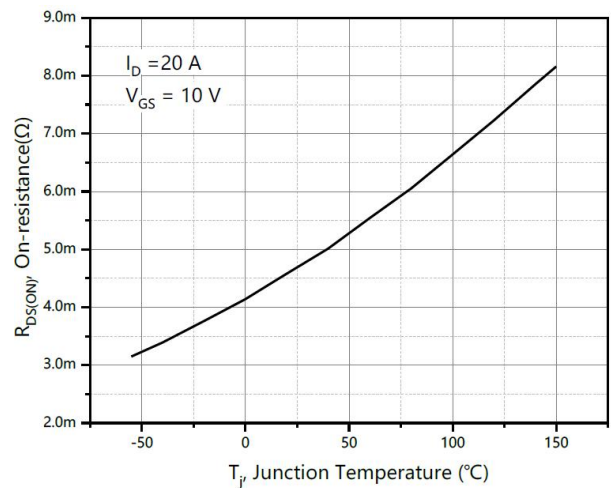


Figure 6, Drain-source on-state resistance

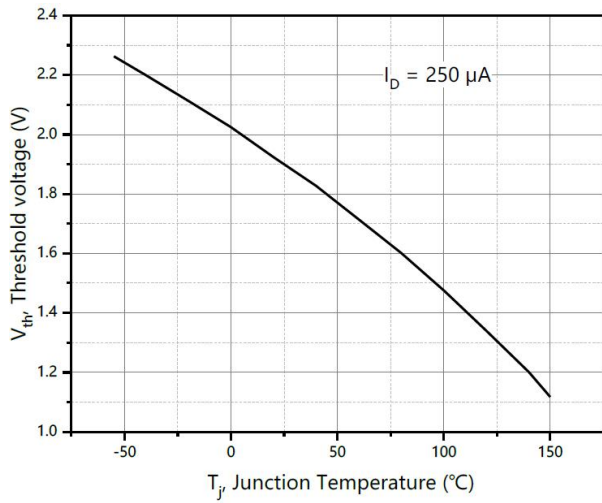


Figure 7, Threshold voltage

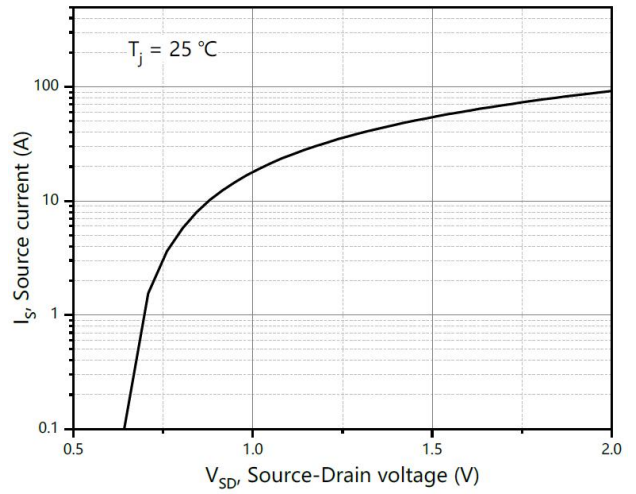


Figure 8, Forward characteristic of body diode

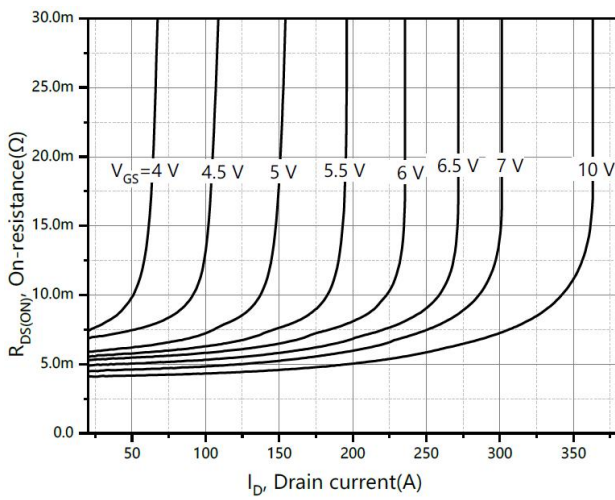


Figure 9, Drain-source on-state resistance

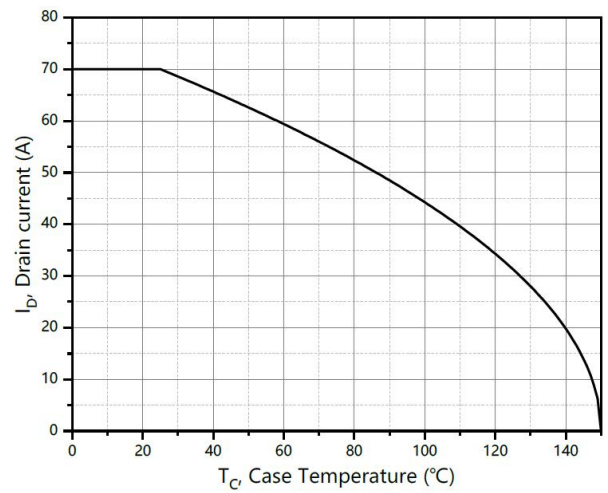


Figure 10, Drain current

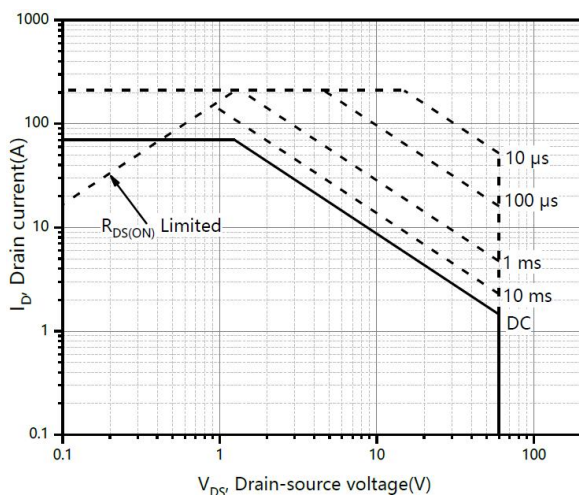


Figure 11, Safe operation area for TO252/PDFN5\*6/TO220  $T_C=25\text{ }^\circ\text{C}$

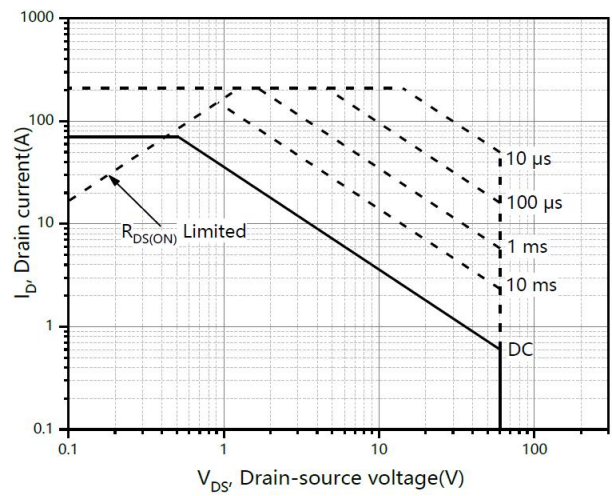
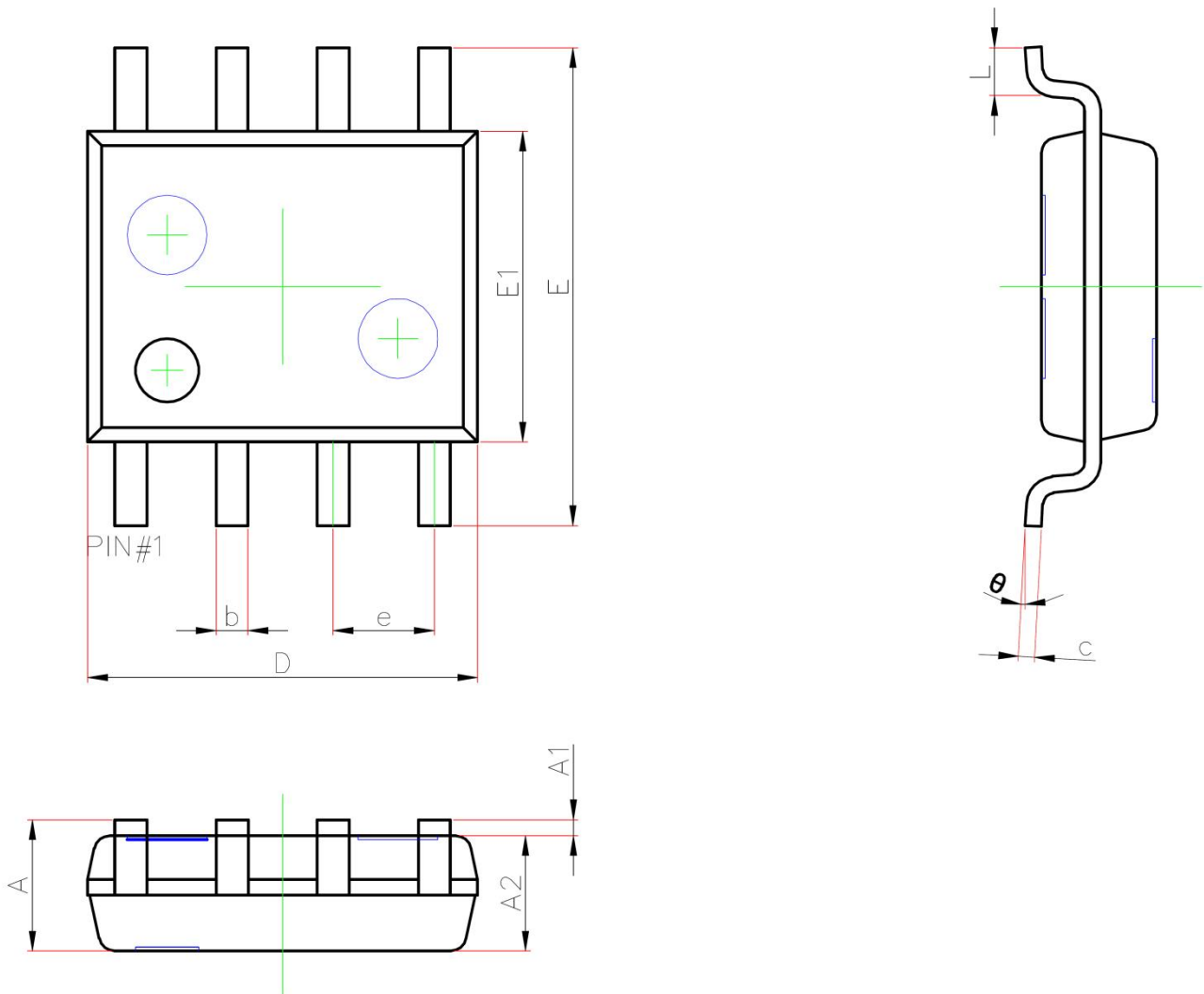


Figure 12, Safe operation area for TO220F  $T_C=25\text{ }^\circ\text{C}$

**SOP-8 Package Information**


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
$\theta$	0°	8°

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