

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	10mΩ@10V	12A
	13mΩ@4.5V	

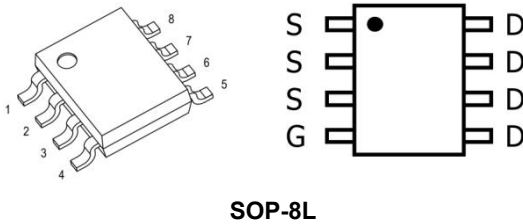
Feature

- Fast Switching
- Extremely low switching loss
- Excellent Rdson and Low Gate Charge

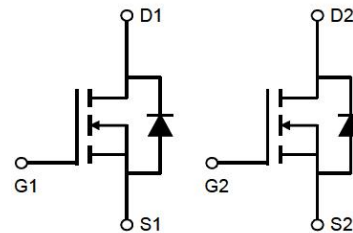
Application

- Power Management
- Switched mode power supply

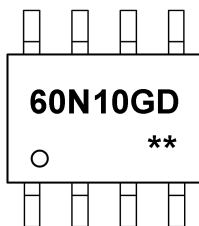
Package



Circuit diagram



Marking



60N10GD =Device 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}	±20	V
Continuous drain current ¹⁾ , TC=25 °C	I _D	12	A
Pulsed drain current ²⁾ , TC=25 °C	I _{DM}	48	A
Power dissipation ³⁾	P _D	3.5	W
Single pulsed avalanche energy ⁴⁾	E _{AS}	95	mJ
Thermal resistance, junction-Ambient	R _{θJA}	37.8	°C/W
Operation and storage temperature	T _{stg} , T _j	-55 to 150	°C

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

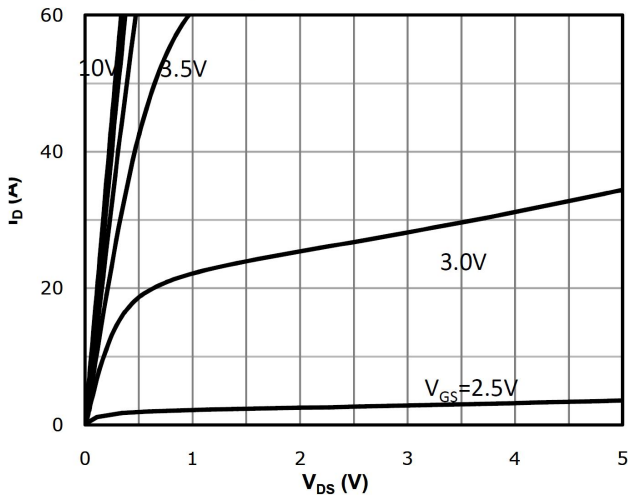
Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0 V, I _D =250 μA	60			V
Gate-source leakage current	I _{GSS}	V _{GS} =±20 V			±100	nA
Drain-source leakage current	I _{DSS}	V _{DS} =48 V, V _{GS} =0 V			1	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	1	1.6	2.5	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10 V, I _D = 6A		10	13	mΩ
		V _{GS} =4.5 V, I _D = 4A		13	18	
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} =0 V, V _{DS} =30V, f=1MHz		1402		pF
Output capacitance	C _{oss}			463		
Reverse transfer capacitance	C _{rss}			31		
Total gate charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =10A		26		nC
Gate-source charge	Q _{gs}			6.4		
Gate-drain charge	Q _{gd}			3.3		
Switching Characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _D =10A, V _{GS} =10V, R _G =2.7Ω		11		ns
Rise time	t _r			20		
Turn-off delay time	t _{d(off)}			29		
Fall time	t _f			30		
Body Diode Characteristics						
Diode forward voltage	V _{SD}	I _S =1 A, V _{GS} =0 V			1.2	V

Note:

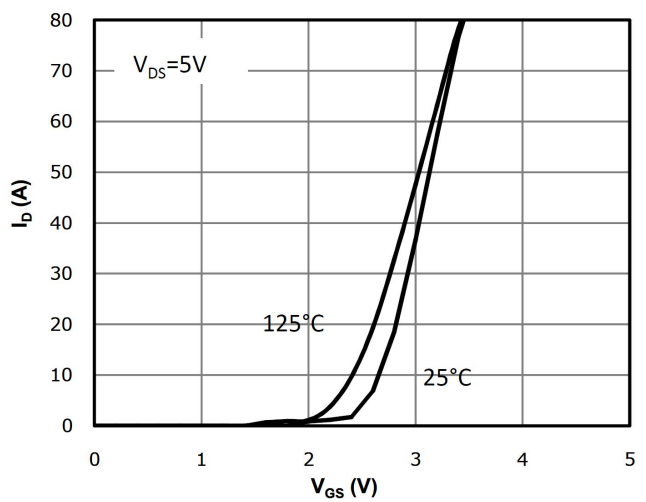
1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. P_d is based on max. junction temperature, using junction-case thermal resistance.
4. V_{DD}=30 V, V_{GS}=10 V, L=0.5 mH, starting T_j=25 °C.

Typical Characteristics

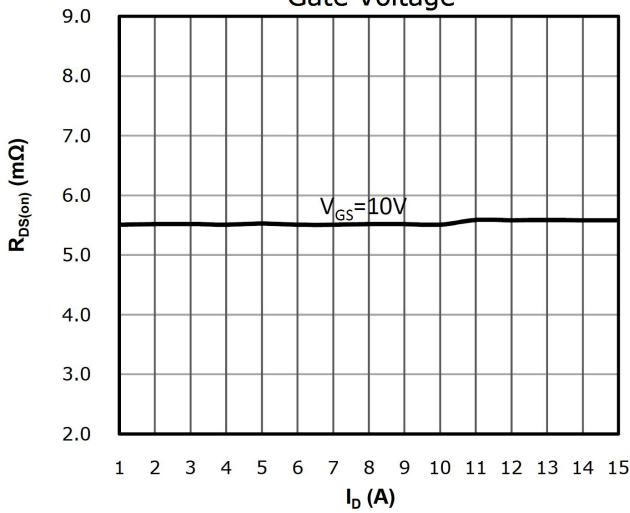
Output Characteristics



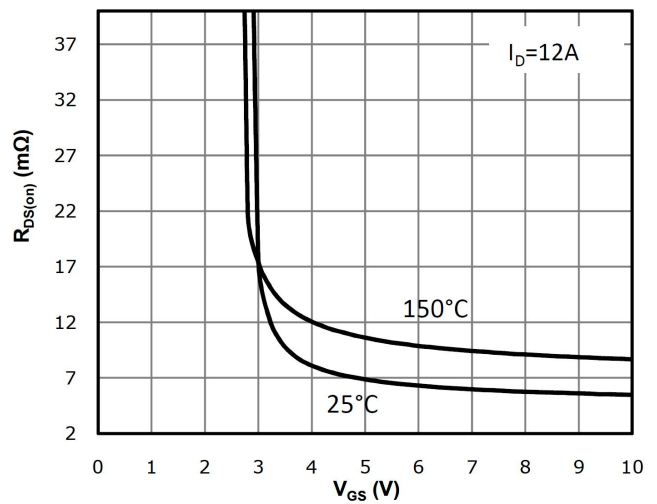
Transfer Characteristics



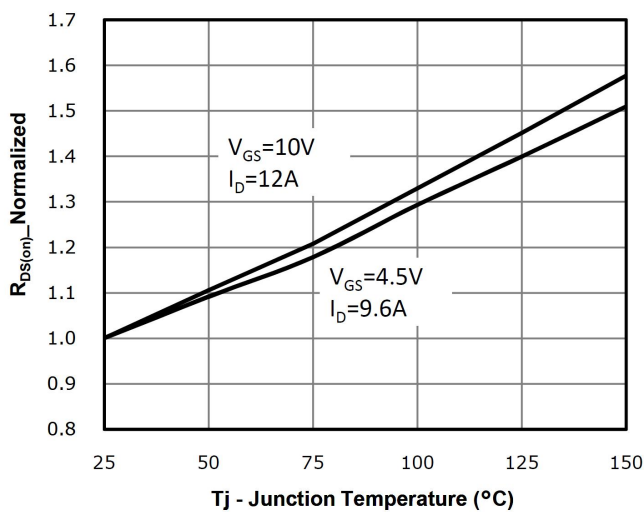
$R_{DS(on)}$ vs Drain Current and Gate Voltage



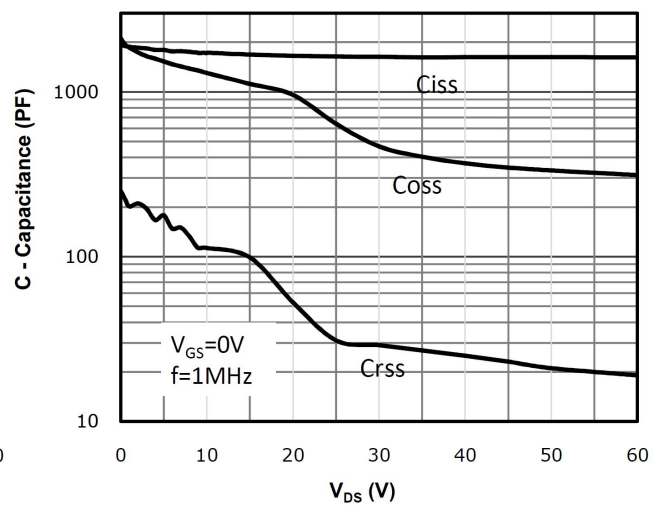
$R_{DS(on)}$ vs Gate Voltage



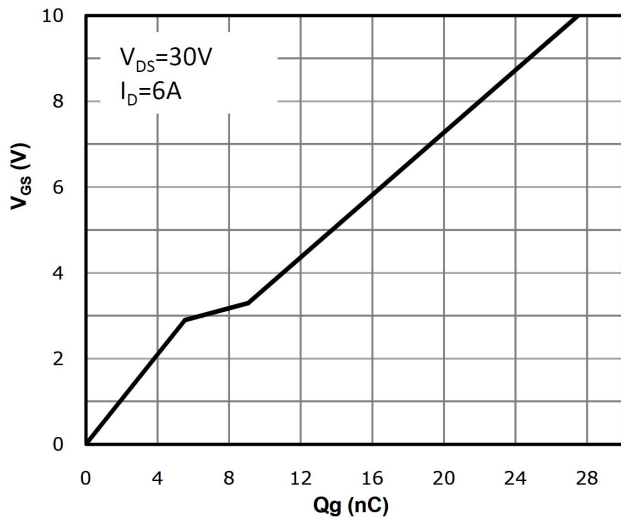
$R_{DS(on)}$ vs. Temperature



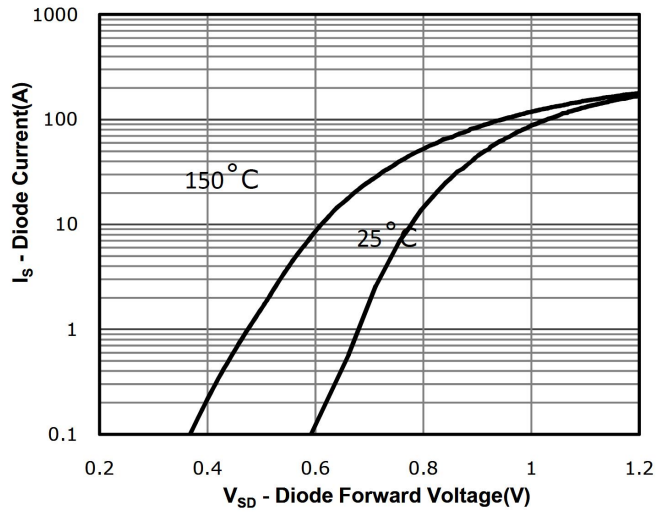
Capacitance Characteristics



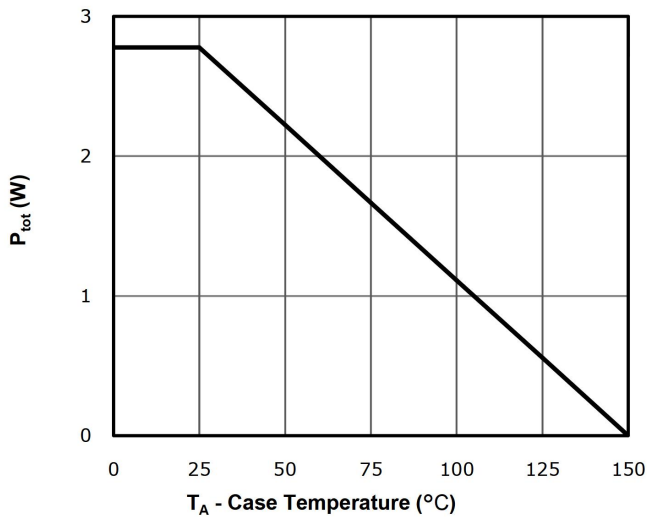
Gate Charge Characteristics



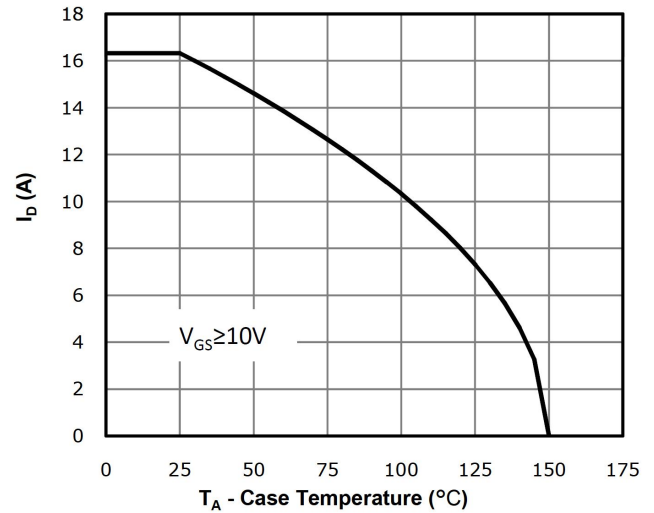
Body-diode Forward Characteristics



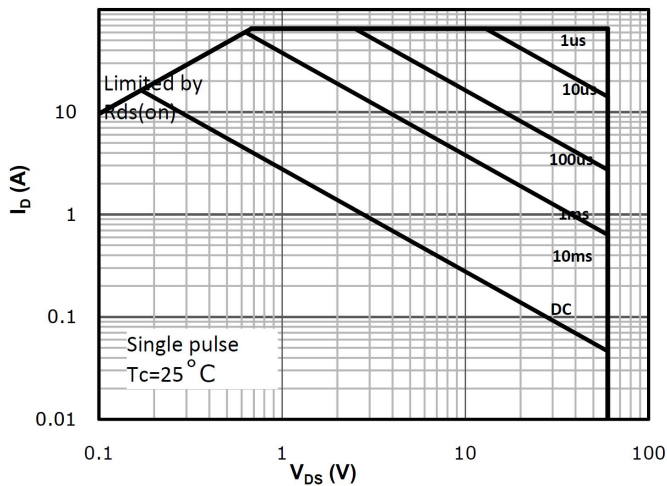
Power Dissipation



Drain Current Derating

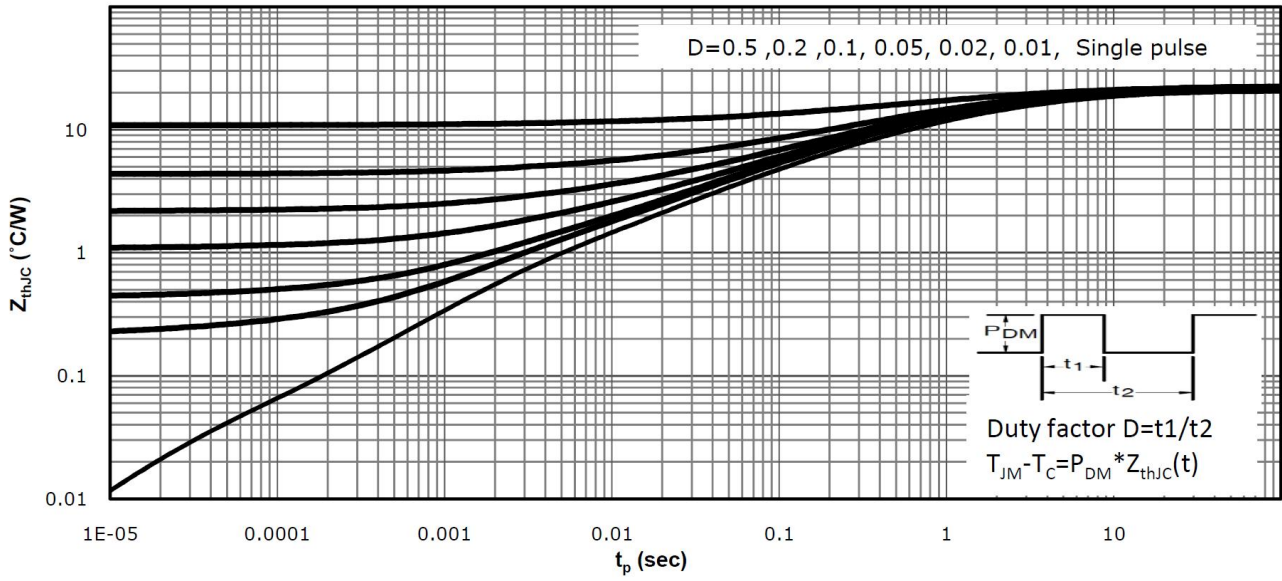


Safe Operating Area

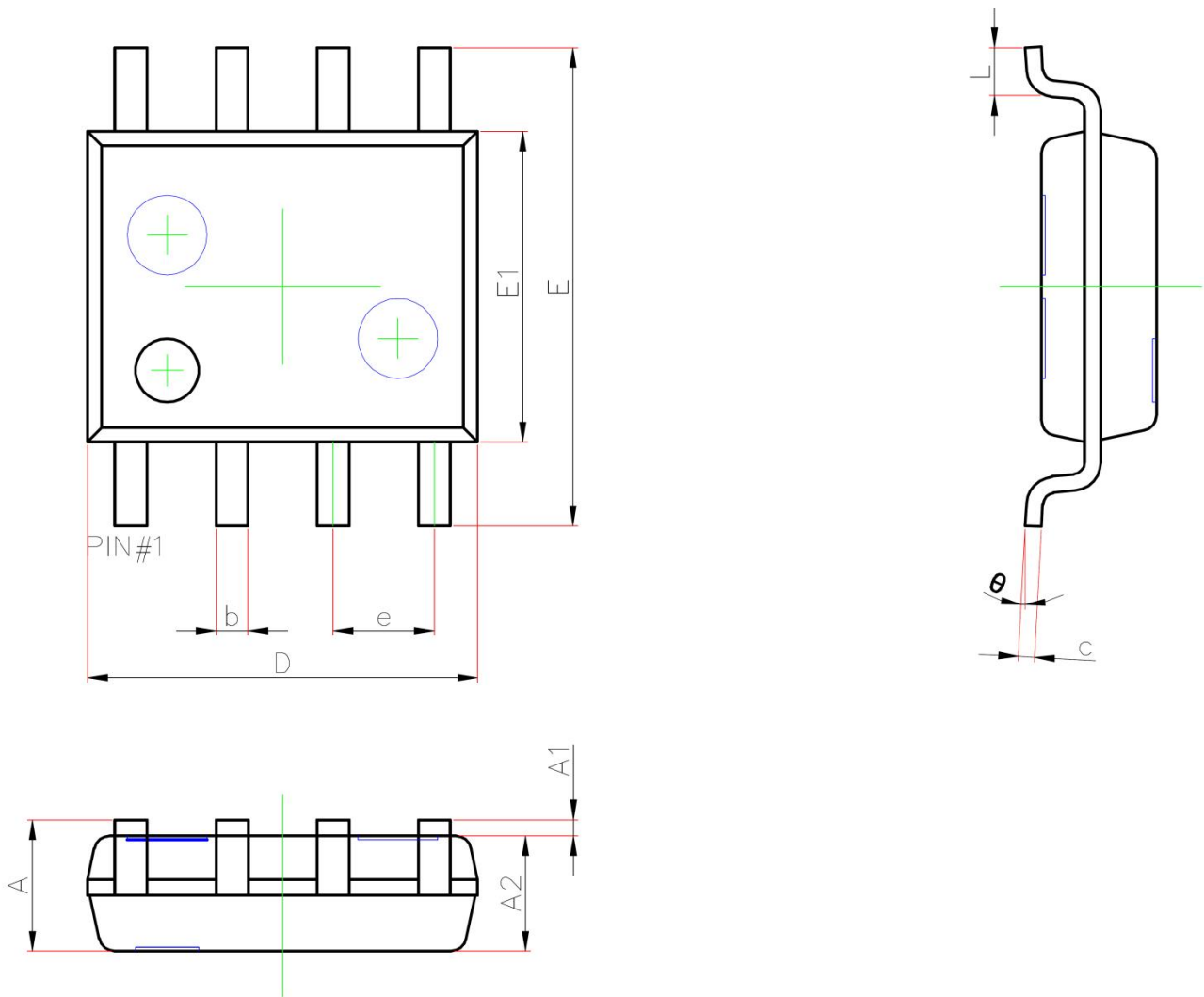




Max. Transient Thermal Impedance



SOP-8L 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
θ	0°	8°

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