

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	8.9m Ω @-10V	-18A
	13m Ω @4.5V	

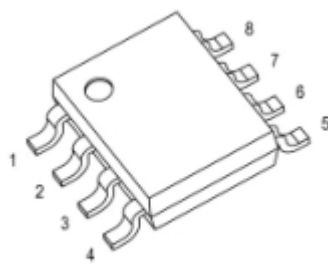
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

Applications

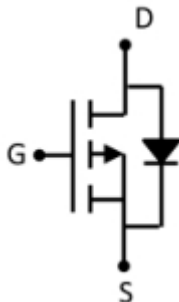
- Power switch
- Load switch in high current applications
- DC/DC converters

Package

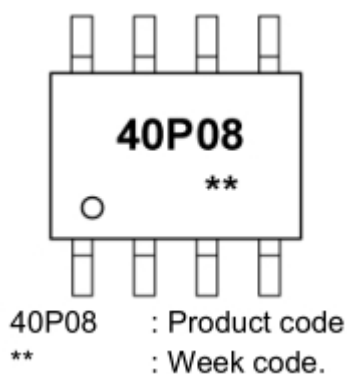


SOP-8L

Circuit diagram



Marking



Absolute maximum ratings

($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-18	A
Pulsed Drain Current	I_{DM}	-72	A
Maximum Power Dissipation ($T_c=25^{\circ}\text{C}$)	P_D	3	W
Single pulse avalanche energy ¹	E_{AS}	700	mJ
Thermal Resistance, Junction-to-Case ²	$R_{\theta JC}$	41.7	$^{\circ}\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

Electrical characteristics

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

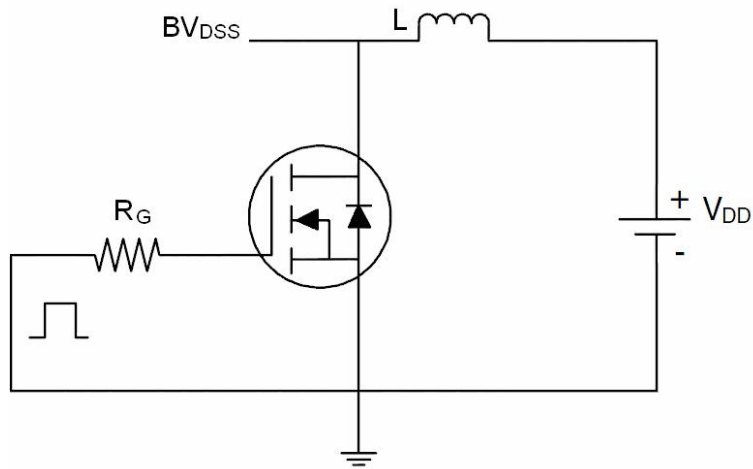
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D = -250μA	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V			-1	uA
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	uA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.2	-1.6	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -10A		8.9	11.5	mΩ
		V _{GS} = -4.5V, I _D = -8A		13	18	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -20V, V _{GS} =0V, f=1MHz		4004		pF
Output Capacitance	C _{oss}			309		
Reverse Transfer Capacitance	C _{rss}			229		
Switching Characteristics						
Turn-on Delay Time	T _{d(on)}	V _{DD} = -20V, I _D = -10A , V _{GS} = -10V, R _G =3Ω		9.9		nS
Turn-on Rise Time	T _r			32		
Turn-off Delay Time	T _{d(off)}			46		
Turn-off Fall Time	T _f			53		
Total Gate Charge (V _{GS} = -4.5V)	Q _g	V _{DS} = -20V, , I _D = -20A V _{GS} = -10V		31		nC
Total Gate Charge (V _{GS} = -10V)	Q _g			67		
Gate-Source Charge	Q _{gs}			13.2		
Gate-Drain Charge	Q _{gd}			11		
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S = -60A			-1.2	V

Note:

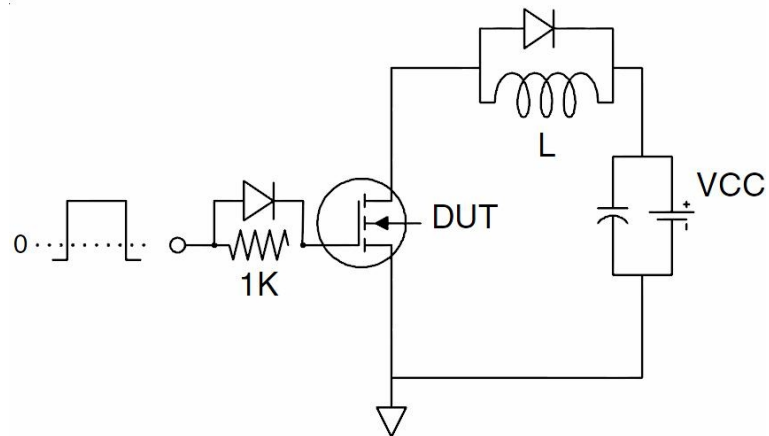
1. E_{AS} condition: $T_j = 25^{\circ}\text{C}, V_{DD} = -20V, V_G = -10V, L = 1mH, R_g = 25\Omega$
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

Test Circuits

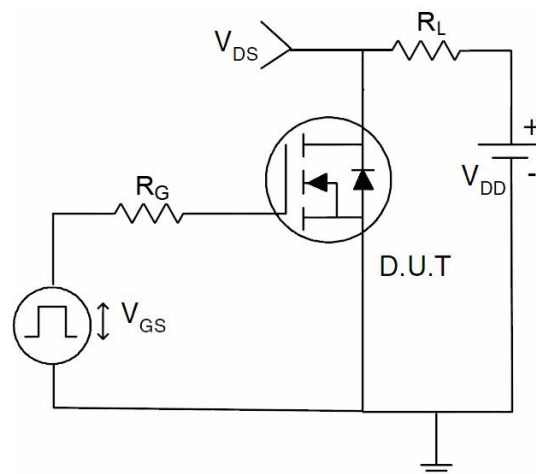
- EAS Test Circuits



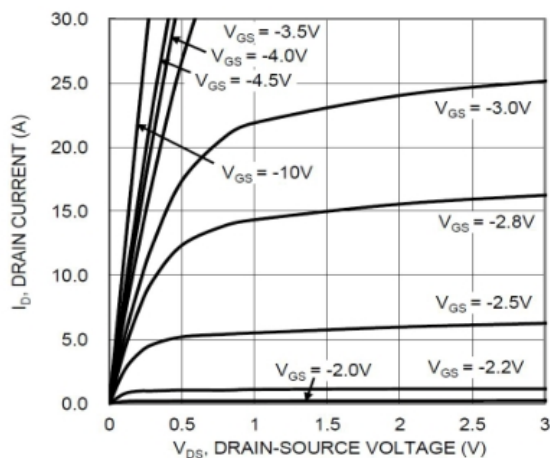
- Gate Charge Test Circuit



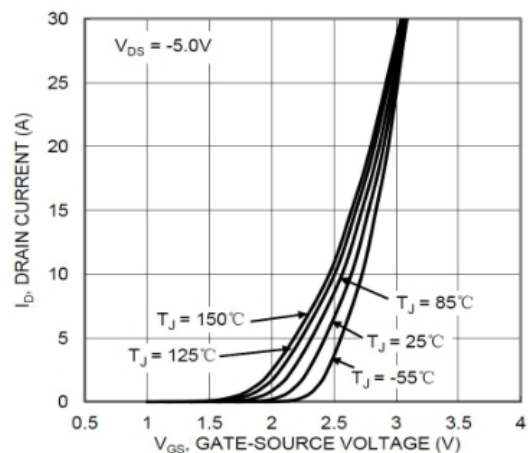
- Switch Time Test Circuit



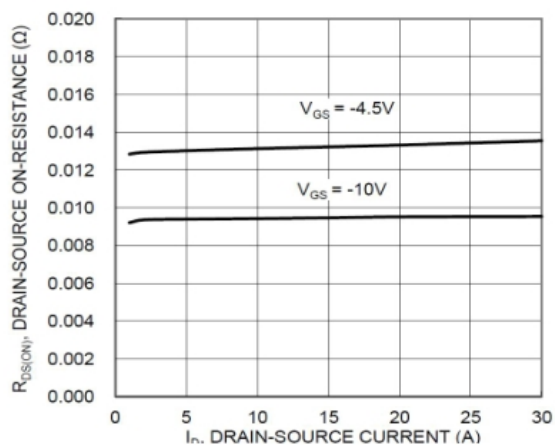
Typical Characteristics



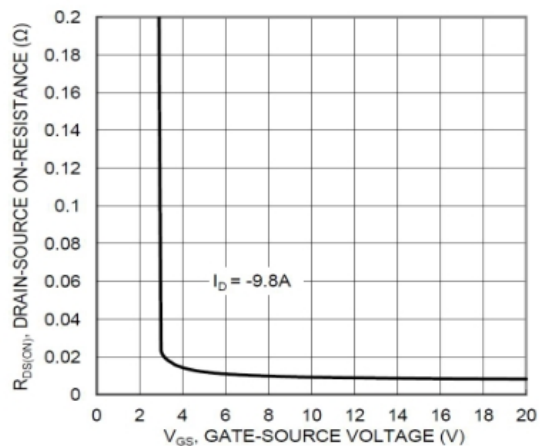
Typical Output Characteristic



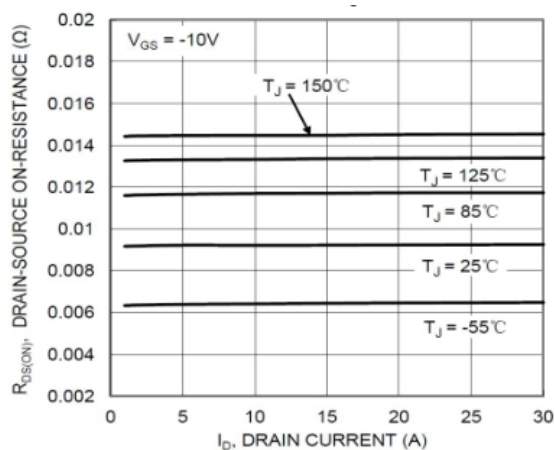
Typical Transfer Characteristic



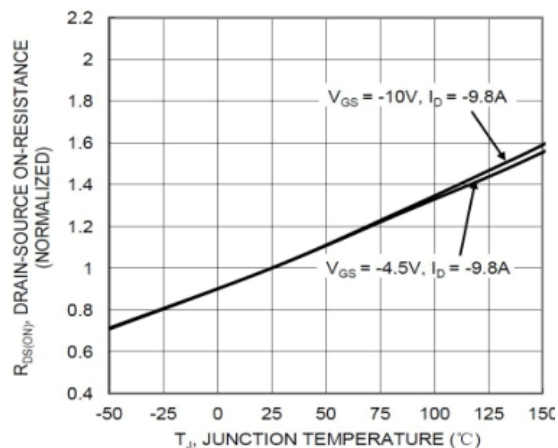
Typical On-Resistance vs. Drain Current and Gate Voltage



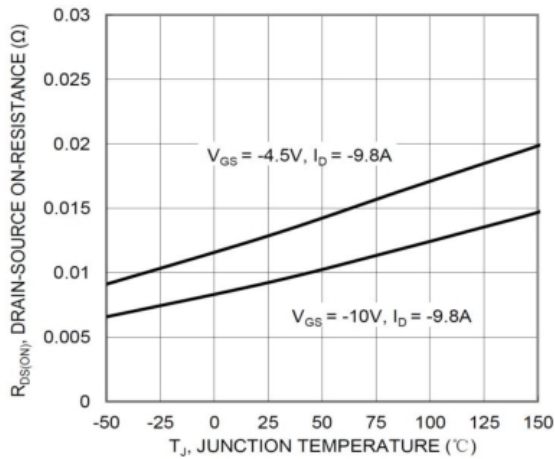
Typical Transfer Characteristic



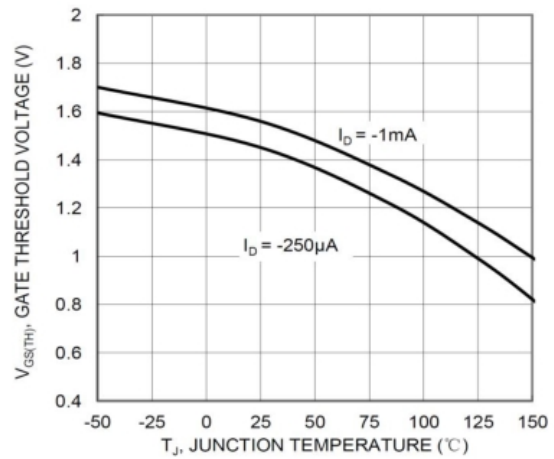
Typical On-Resistance vs. Drain Current and Temperature



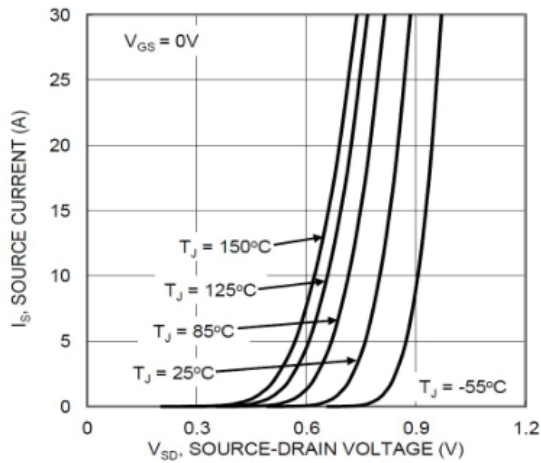
On-Resistance Variation with Temperature



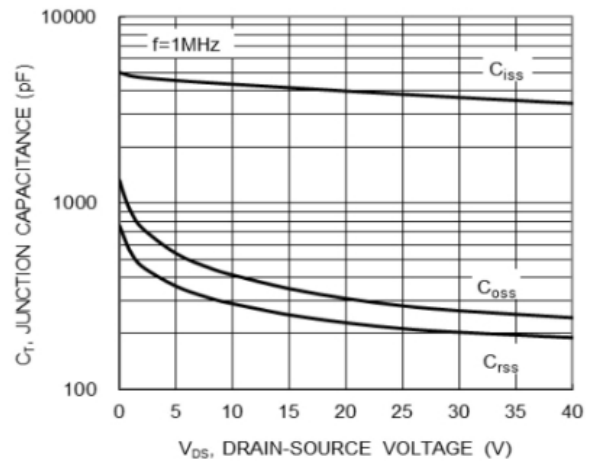
On-Resistance Variation with Temperature



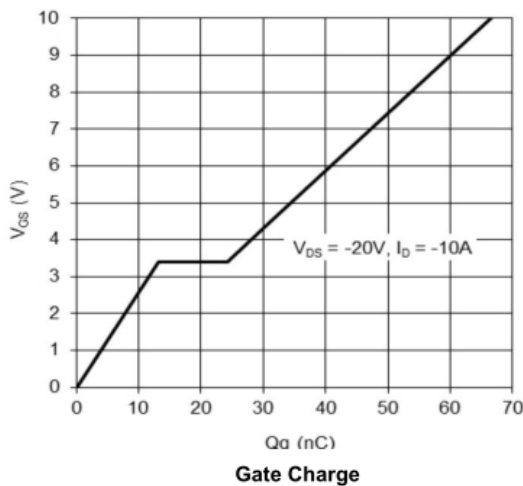
Gate Threshold Variation vs. Junction Temperature



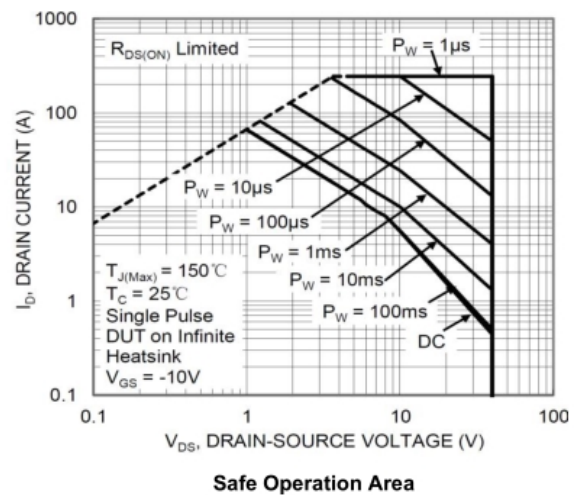
Diode Forward Voltage vs. Current



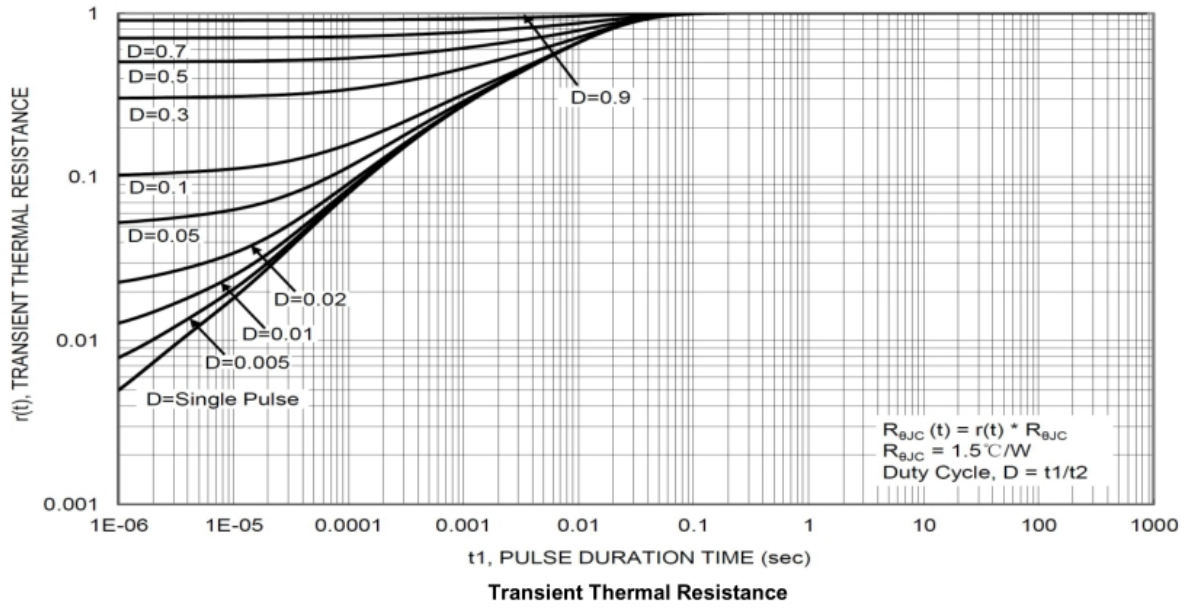
Typical Junction capacitance



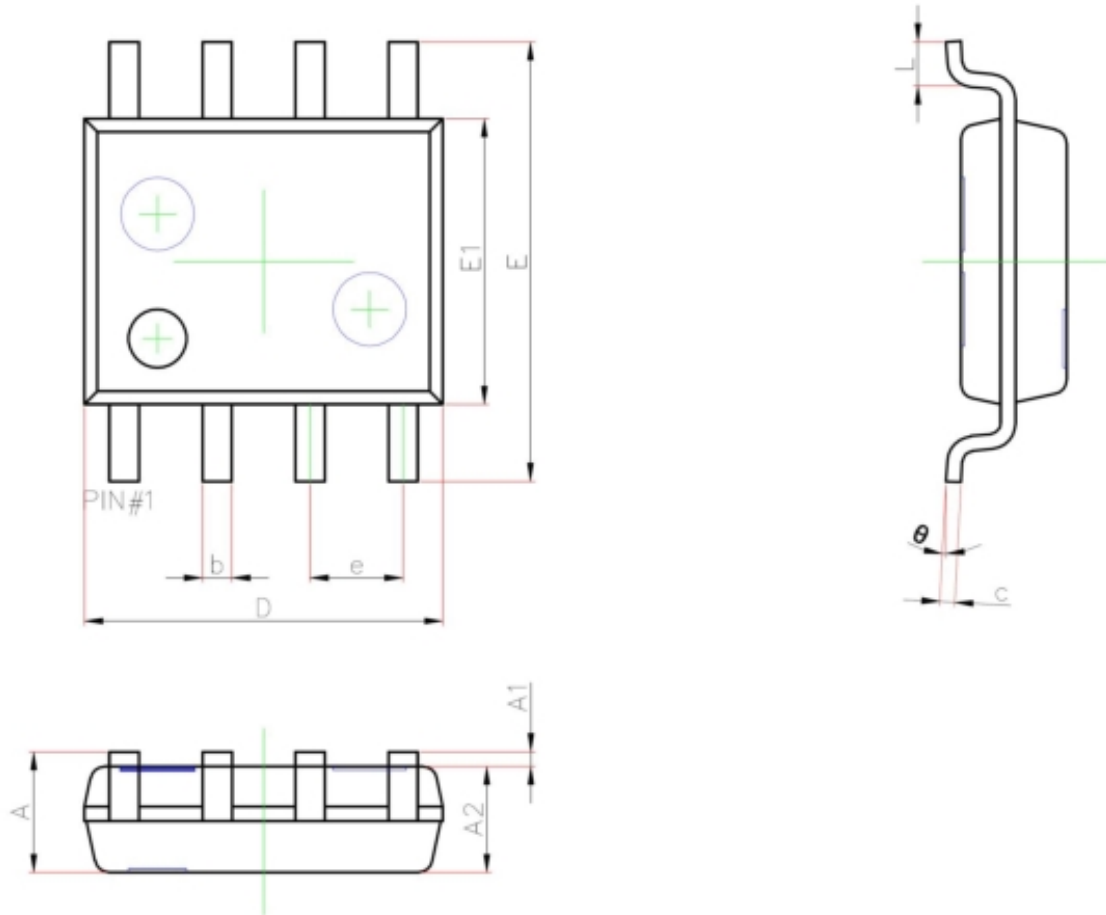
Gate Charge



Safe Operation Area



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°