

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	8mΩ@10V	12A

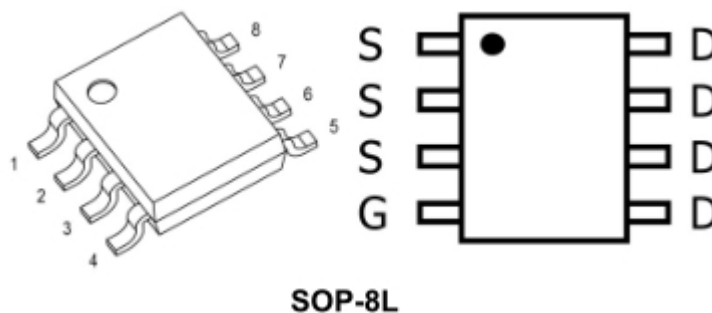
Feature

- $V_{DS} = 40V, I_D = 12A$
- $R_{DS(ON)} < 12m\Omega$ @ $V_{GS}=10V$ (Typ. 8 mΩ)
 $R_{DS(ON)} < 18m\Omega$ @ $V_{GS}=4.5V$ (Typ. 11 mΩ)
- 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
- Special process technology for high ESD capability

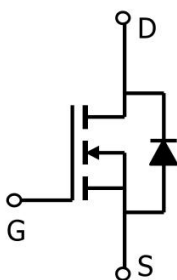
Application

- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

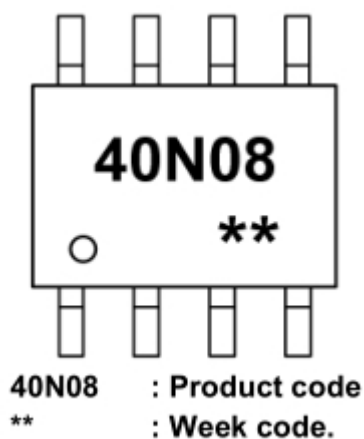
Package



Circuit diagram



Marking



Absolute maximum ratings

(T_a=25°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	12	A
Drain Current-Continuous(T _C =100°C)	I _{D (100 °C)}	8.5	A
Pulsed Drain Current	I _{DM}	60	A
Maximum Power Dissipation	P _D	3	W
Thermal Resistance,Junction-to-Ambient ⁽¹⁾	R _{θJA}	41.7	°C/ W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

Electrical characteristics

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

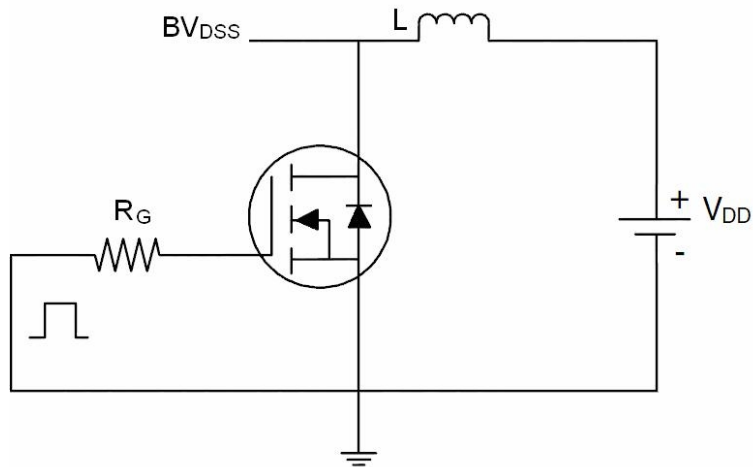
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	40	45		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V,V _{GS} = 0V			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	uA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A V _{GS} =4.5V, I _D =8A		8 11	12 18	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V,I _D =10A		75		S
Dynamic Characteristics ⁽³⁾						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		1780		pF
Output Capacitance	C _{oss}			209		
Reverse Transfer Capacitance	C _{rss}			160		
Switching Characteristics ⁽³⁾						
Turn-On Delay Time	T _{d(on)}	V _{DS} =20V, R _L =2Ω, V _{GS} =10V, R _G =3.3Ω		6.4		nS
Rise Time	T _r			17.2		
Turn-Off Delay Time	T _{d(off)}			29.6		
Fall Time	T _f			16.8		
Total Gate Charge	Q _g	V _{DS} =20V, I _D =10A, V _{GS} =10V		30		pF
Gate-Source Charge	Q _{gs}			4.2		
Gate-Drain Charge	Q _{gd}			9.5		
Diode Characteristics						
Diode Forward Voltage ⁽²⁾	V _{SD}	V _{GS} =0V,I _S =10A			1.2	A
Diode Forward Current ⁽¹⁾	I _S				12	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 10A		29		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ⁽²⁾		26		nC

Notes:

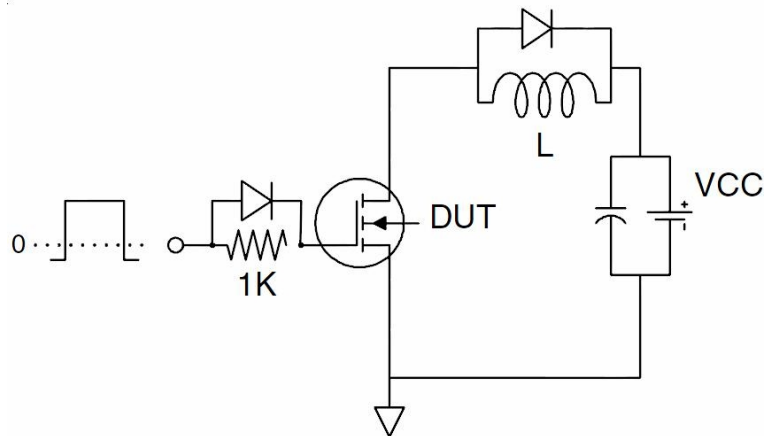
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Test Circuits

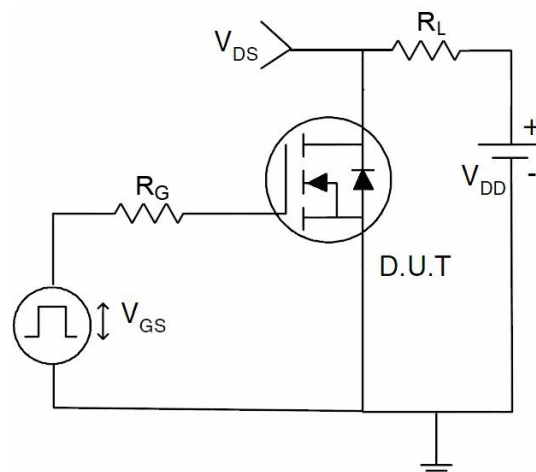
- EAS Test Circuits



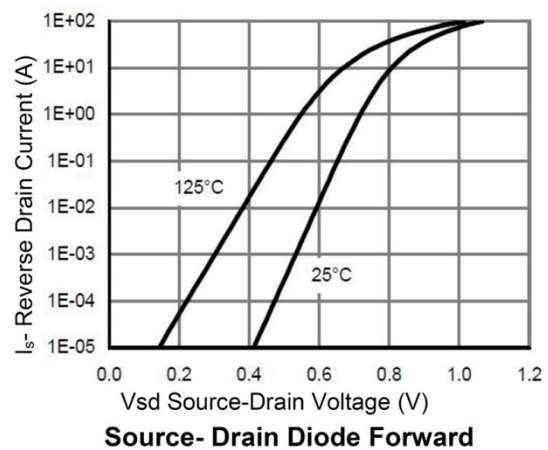
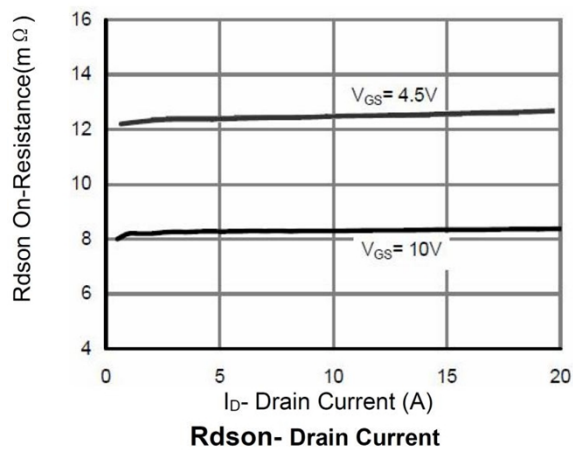
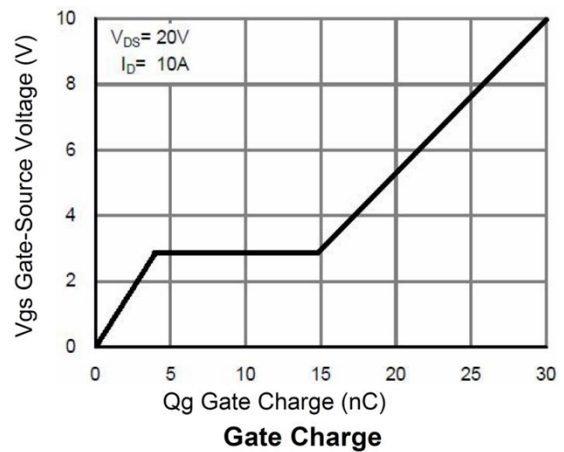
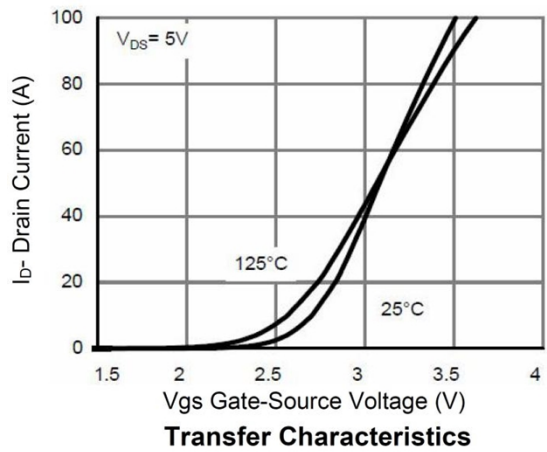
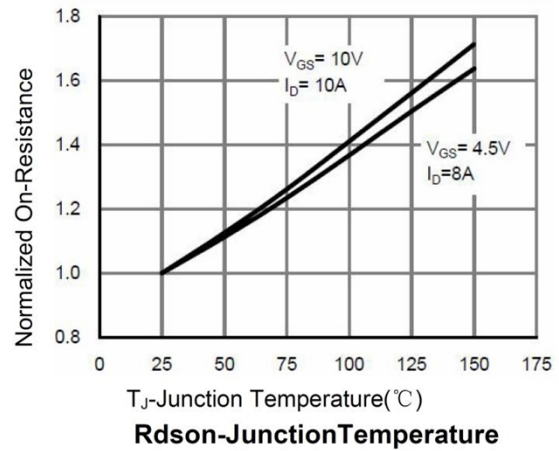
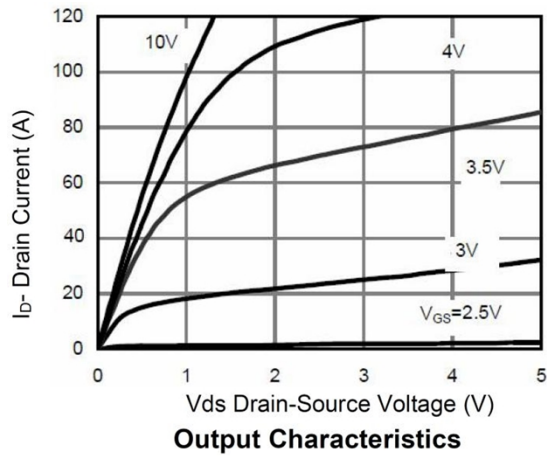
- Gate Charge Test Circuit

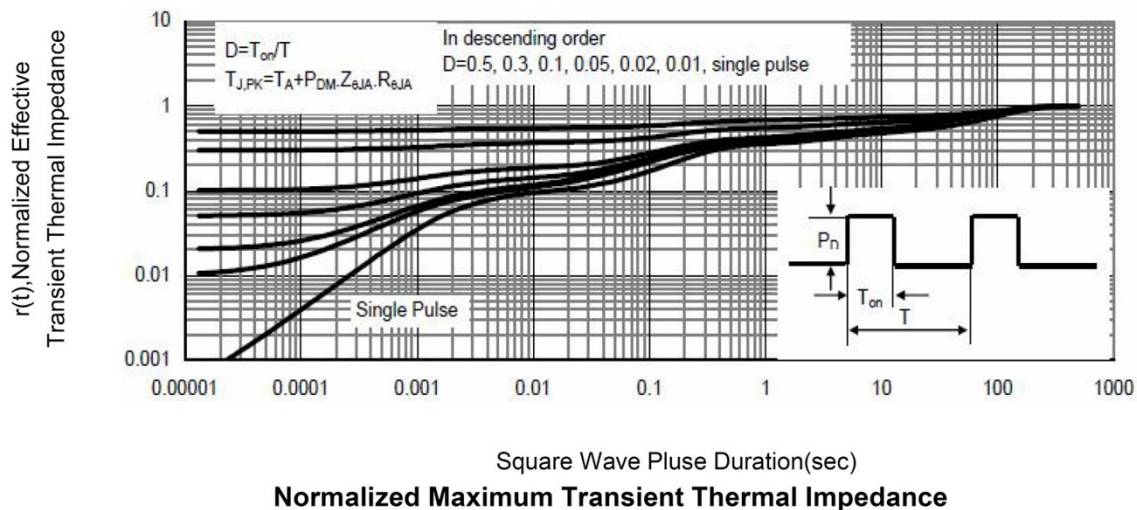
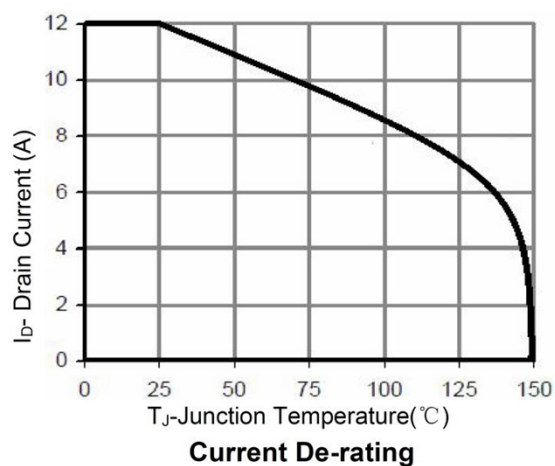
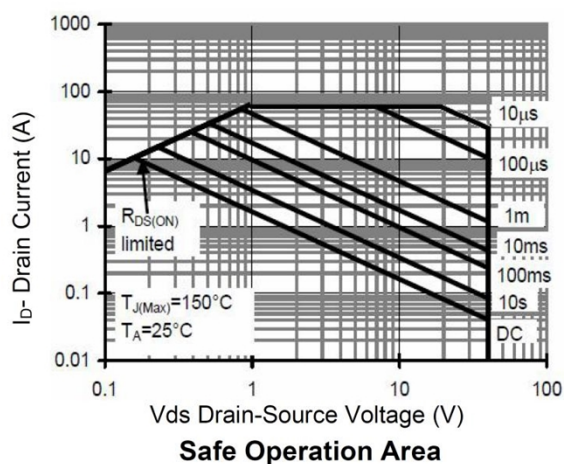
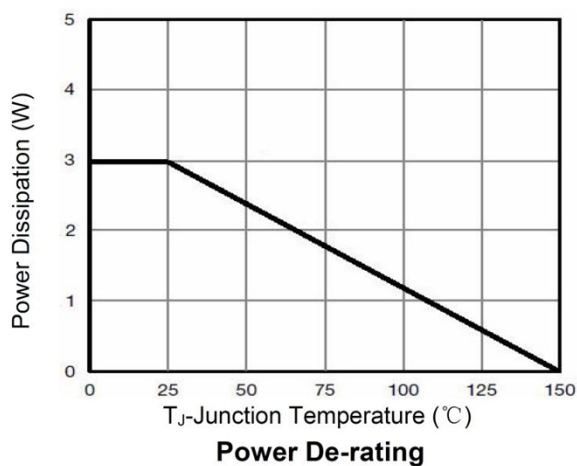
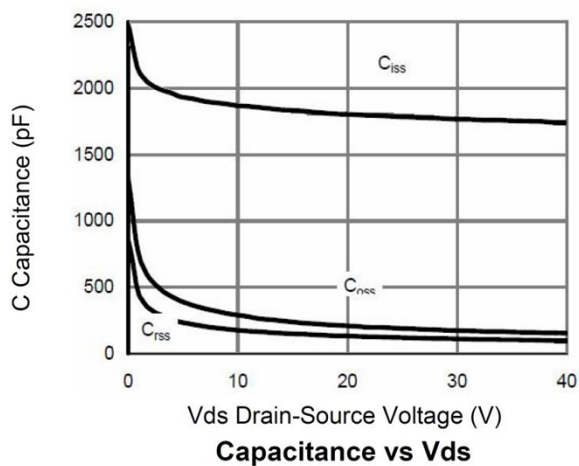


- Switch Time Test Circuit

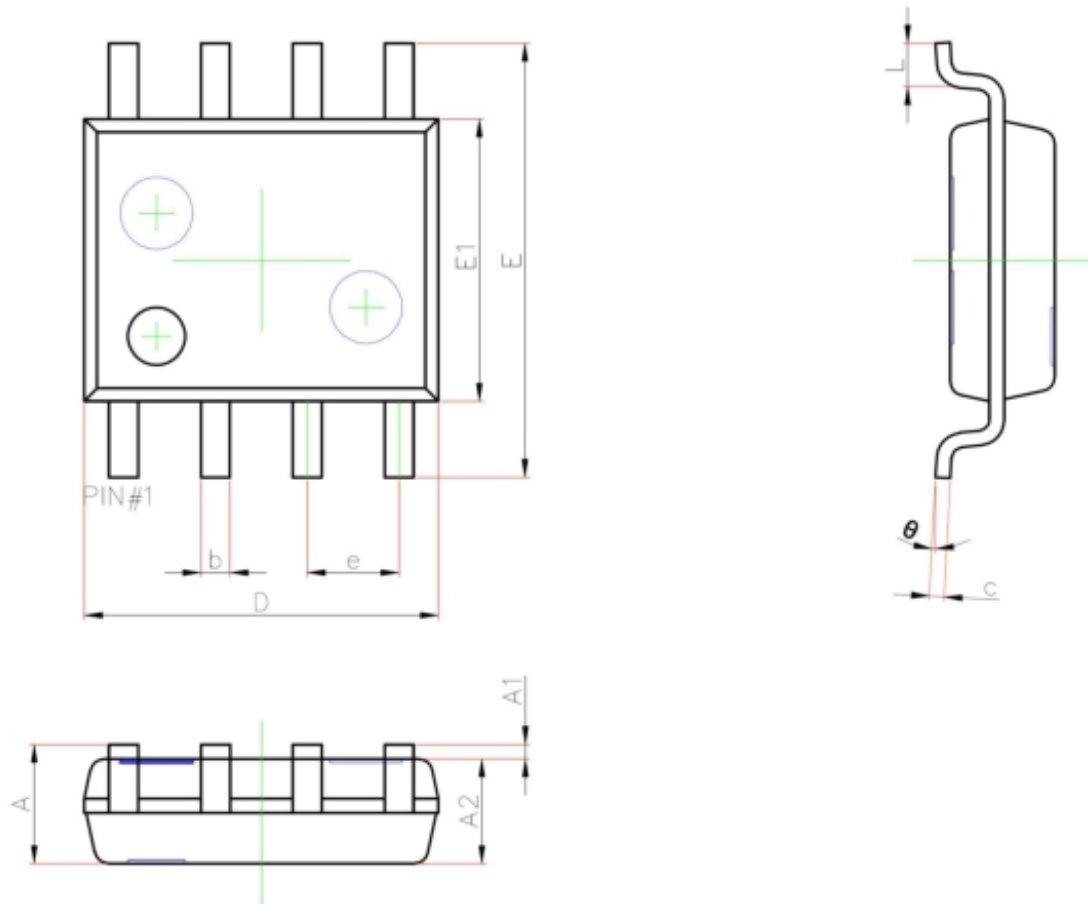


Typical Characteristics





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
θ	0°	8°