Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	8mΩ@10V	55A
	11mΩ@4.5V	

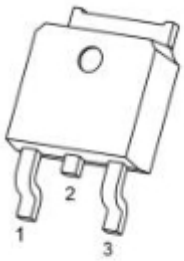
Feature

- V_{DS} =40V,I_D =55A
- $R_{DS(ON)}$ <12mΩ @ V_{GS}=10V (Typ. 8 mΩ)
  $R_{DS(ON)}$ <18mΩ @ V_{GS}=4.5V (Typ. 11 mΩ)
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current

Application

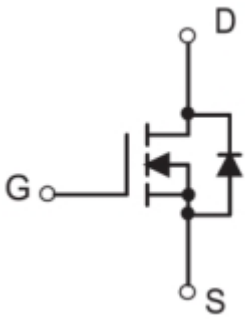
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



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

Circuit diagram



Marking

40N08 : Product code
** : Week code

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	20	V
Continuous Drain Current (T_C=25℃)	I_D	55	A
Pulsed Drain Current (T_C=25℃)	I_{DM}	220	A
Power Dissipation(T_C=25℃)	P_D	93	W
Single Pulse Avalanche Energy (Note 6)	E_{AS}	72	mJ
Typical Thermal Resistance ,Junction to Case	$R_{\theta JC}$	1.34	℃/ W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃

Electrical characteristics

(T_A=25℃, 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			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =12A		8	12	mΩ
		V_{GS} =4.5V, I_D =6A		11	18	
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
Dynamic Characteristics						
Total Gate Charge	Q_g	V_{DS}=20V, I_D =8A, V_{GS}=10V(Note 2,3)		22		pF
Gate-Source Charge	Q_{gs}			4.2		
Gate-Drain Charge	Q_{gd}			4		
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz		1013		pF
Output Capacitance	C_{oss}			134		
Reverse Transfer Capacitance	C_{rss}			88		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=15V, I_D =1A, V_{GS}=10V, R_G =3.3Ω(Note 2,3)		13		nS
Rise Time	T_r			14		
Turn-Off Delay Time	$T_{d(off)}$			45		
Fall Time	T_f			9		
Diode Characteristics						
Maximum Continuous Drain-Source Diode Forward Current	I_S				50	V
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=1A		0.7	1	A

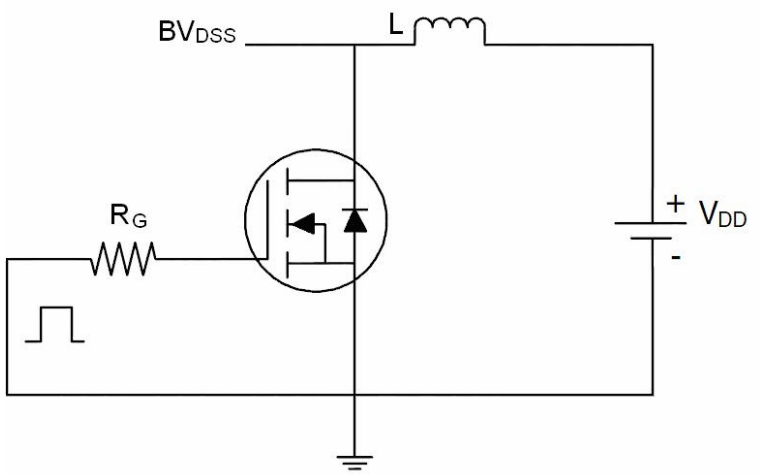
Notes:

1. The test condition is L=0.1mH,V_{DD}=25V, V_{GS}=10V, Rg=25Ω;

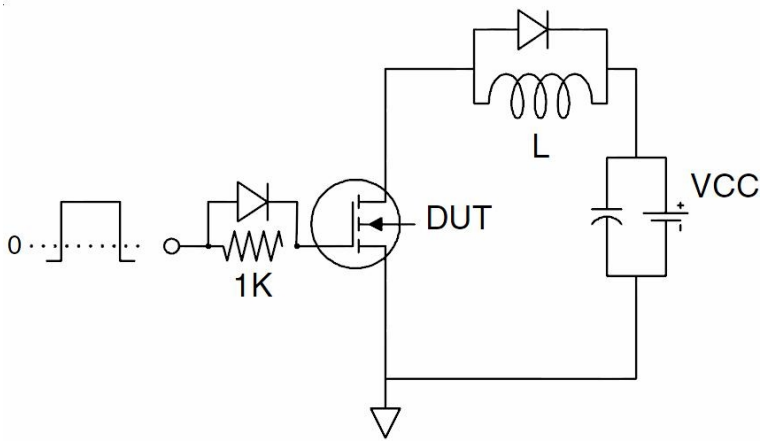
2. Guaranteed by design, not subject to production testing.

Test Circuits

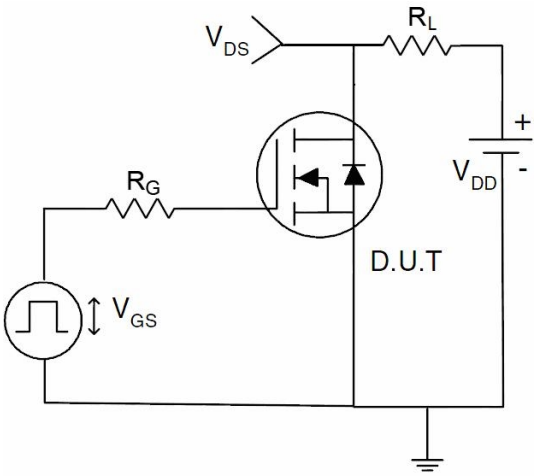
- EAS Test Circuits



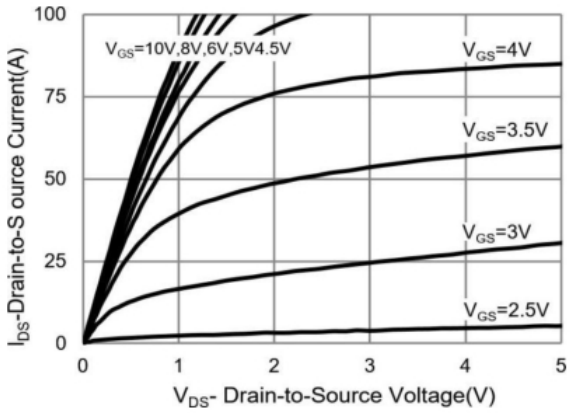
- Gate Charge Test Circuit



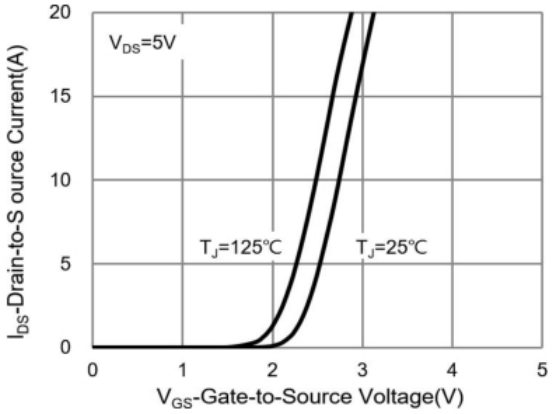
- Switch Time Test Circuit



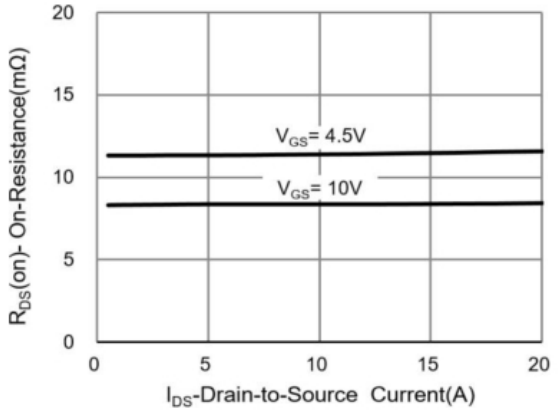
Typical Characteristics



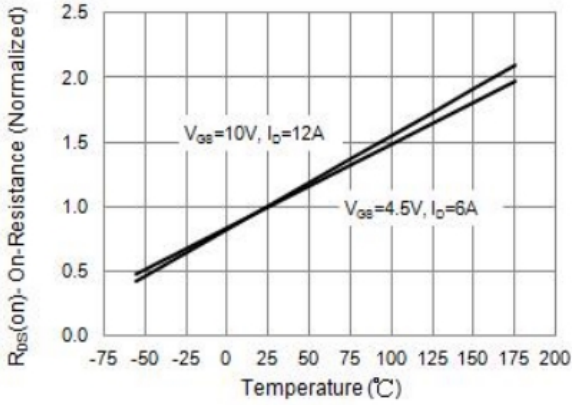
On-Region Characteristics



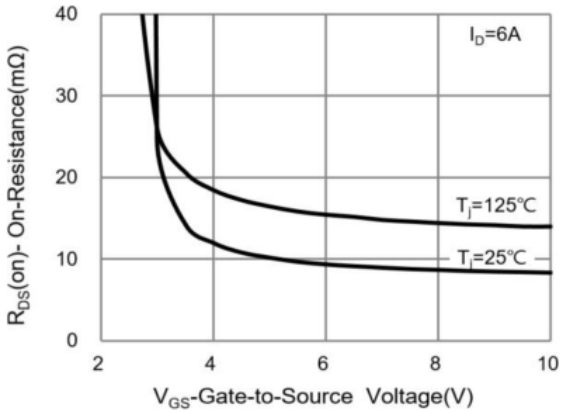
Transfer Characteristics



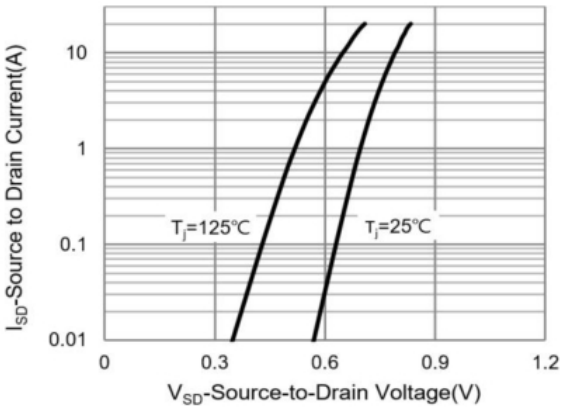
On-Resistance vs. Drain Current



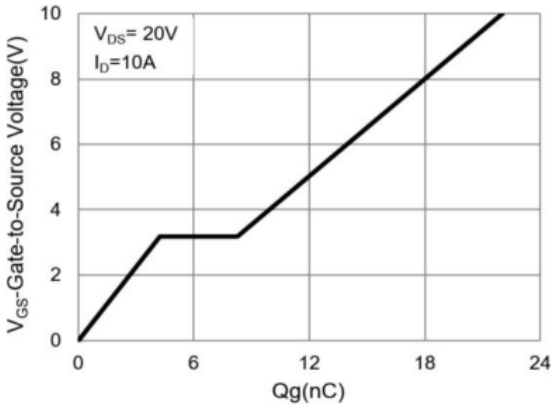
On-Resistance vs. Junction temperature



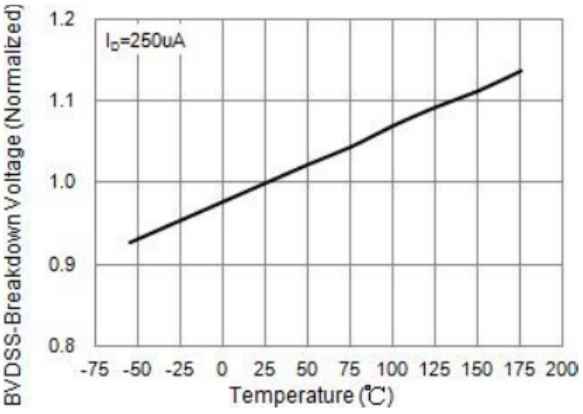
On-Resistance Variation with V_{GS}



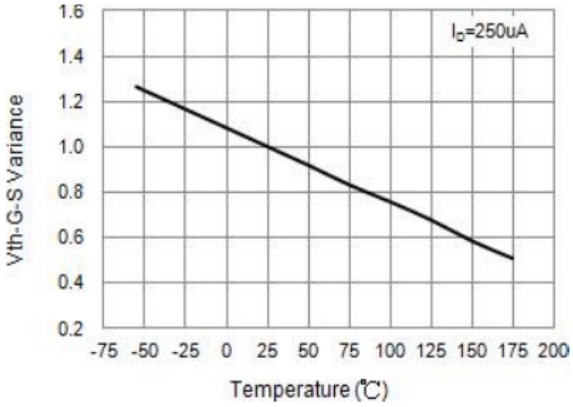
Body Diode Characteristics



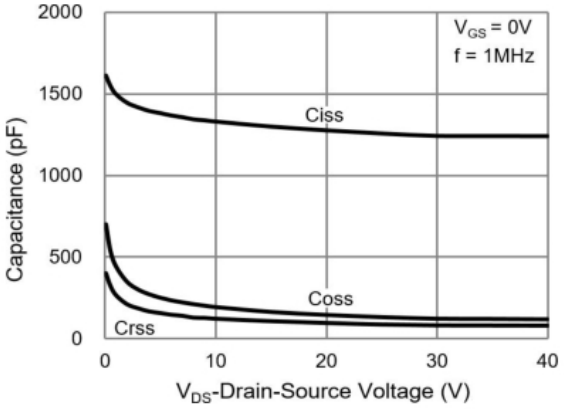
Gate-Charge Characteristics



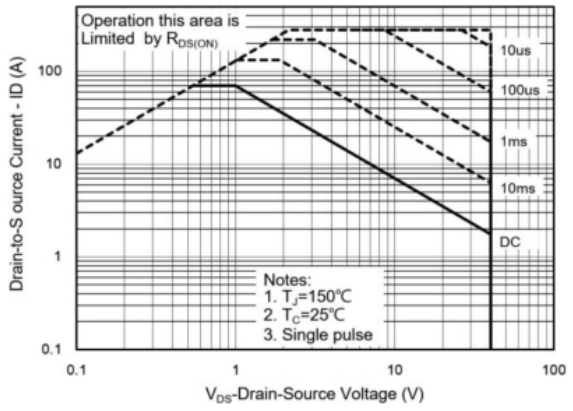
Breakdown Voltage Variation vs. Temperature



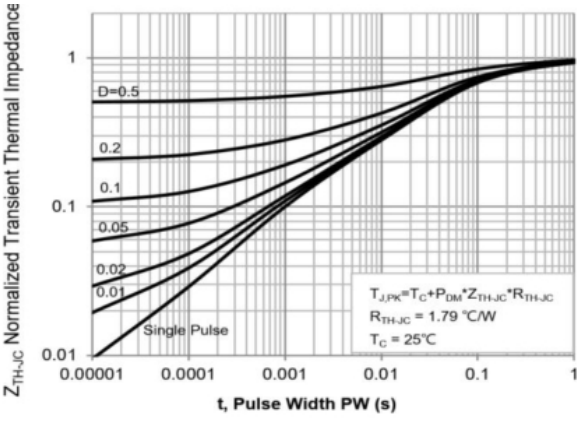
Threshold Voltage Variation with Temperature



Capacitance vs. Drain-Source Voltage

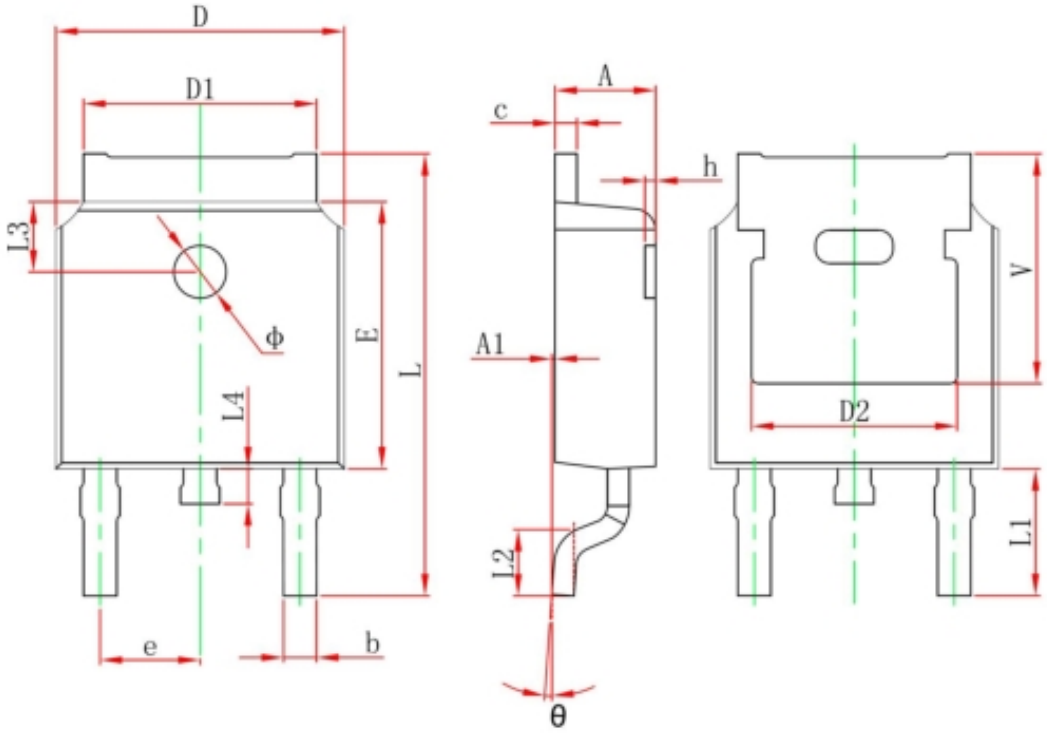


Maximum Safe Operating Area



Normalized 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.	