

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	2.5mΩ@10V	130A

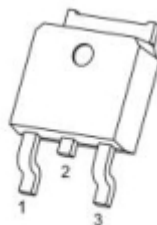
Feature

- Fast Switchin
- High density cell design for ultra low Rdson
- Excellent package for good heat dissipation
- 100% Single Pulse avalanche energy Test

Application

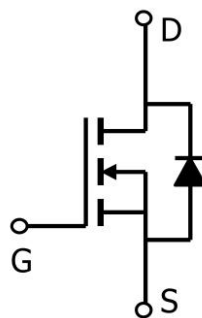
- Load switching
- PWM Application
- Power Management

Package

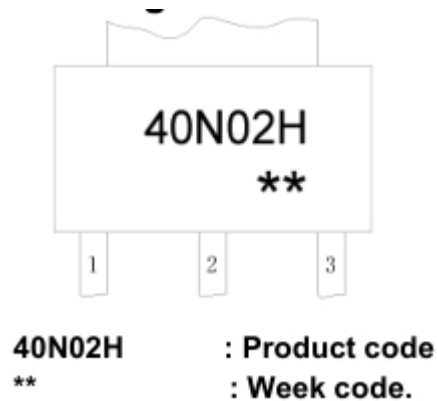


TO-252(1:G 2:D 3:S)

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(Tc=25°C)	I _D	130	A
Pulsed Drain Current	I _{DM}	520	A
Maximum Power Dissipation(Tc=25°C)	P _D	125	W
Single pulse avalanche energy ⁽¹⁾	E _{AS}	306	mJ
Thermal Resistance,Junction-to-Case ⁽²⁾	R _{θJC}	1.0	°C/W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

Electrical characteristics

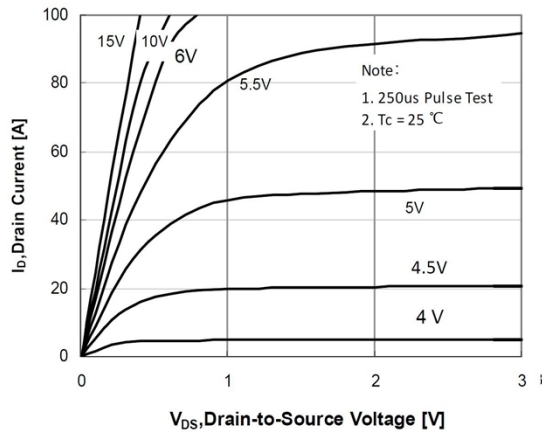
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
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} =32V,V _{GS} = 0V			1	uA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	uA
Gate-source threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.5	3.0	3.5	V
Drain-source on-resistance ²	R _{DS(on)}	V _{GS} =10V, I _D =75A		2.5	3.2	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{DS} =25V, V _{GS} =0V, f=1MHz		4711		pF
Output Capacitance	C _{oss}			869		
Reverse Transfer Capacitance	C _{rSS}			367		
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =32V, V _{GS} =10V, I _D =20A		175		pF
Gate-Source Charge	Q _{gs}			47		
Gate-Drain Charge	Q _{gd}			32		
Turn-On Delay Time	T _{d(on)}	V _{DD} =30V, I _D =75A, R _L =1Ω, V _{GS} =10V, R _G =10Ω		48		nS
Rise Time	T _r			83		
Turn-Off Delay Time	T _{d(off)}			175		
Fall Time	T _f			61		
Diode Characteristics						
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =1A			1.2	V

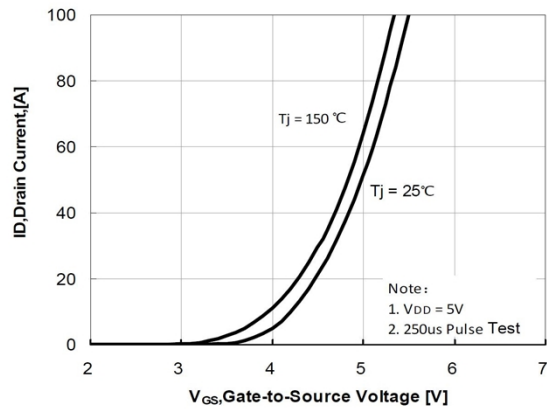
Note:

1. E_{AS} condition : $T_J=25^{\circ}\text{C}, V_{DD}=20V, V_G=10V, L=0.5mH, R_G=25\Omega$
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

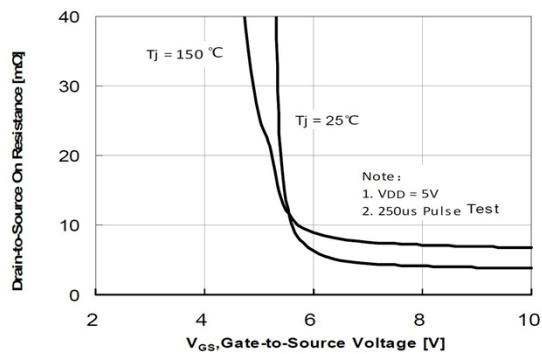
Typical Characteristics



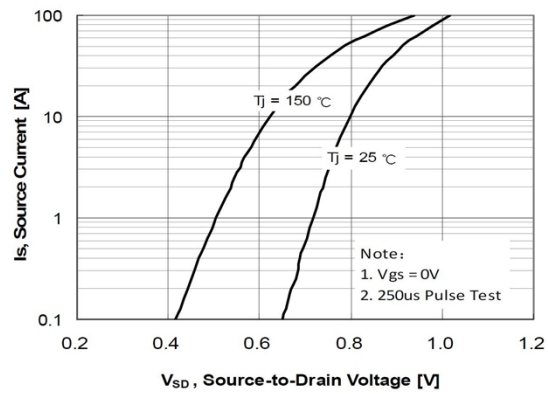
Output Characteristics



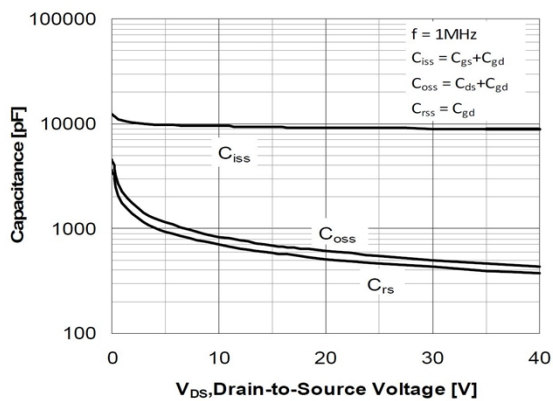
Transfer Characteristics



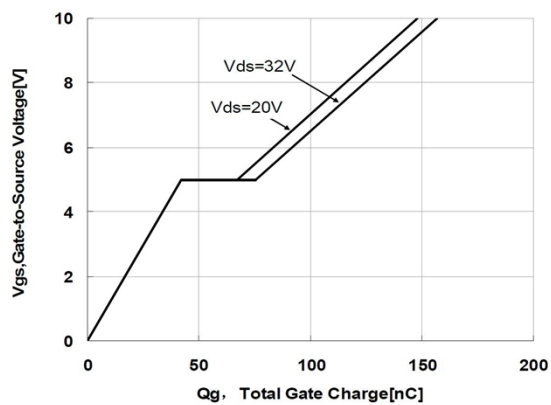
Drain-to-Source On Resistance vs Gate Voltage



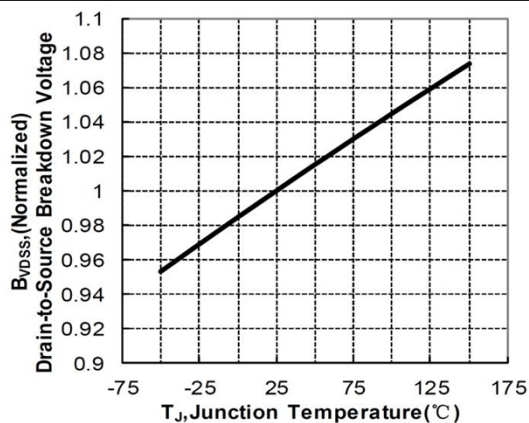
Typical Body Diode Transfer Characteristics



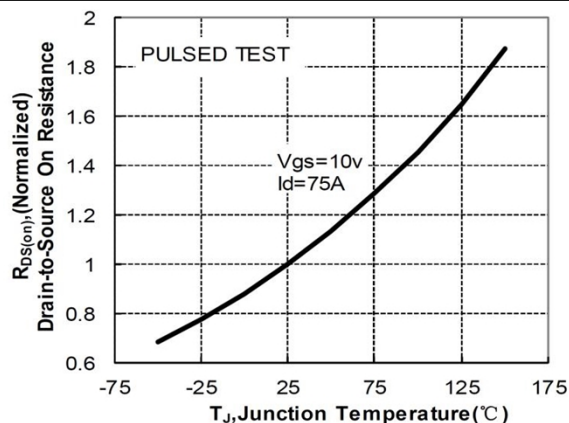
Capacitance Characteristics



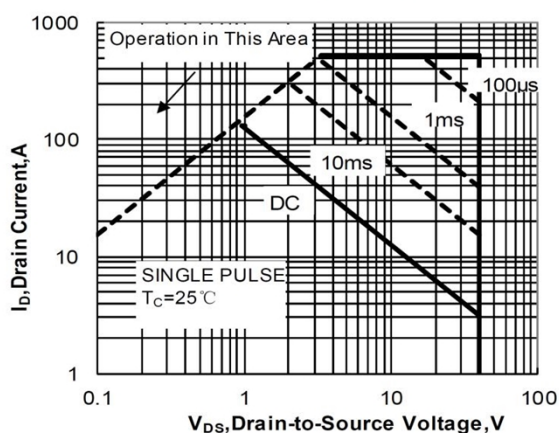
Gate Charge Characteristics



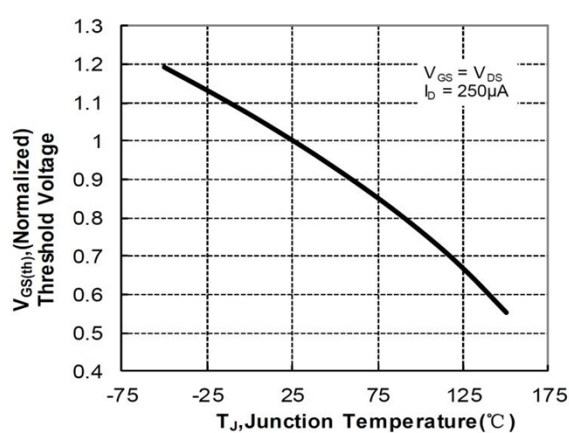
Normalized Breakdown Voltage vs Junction Temperature



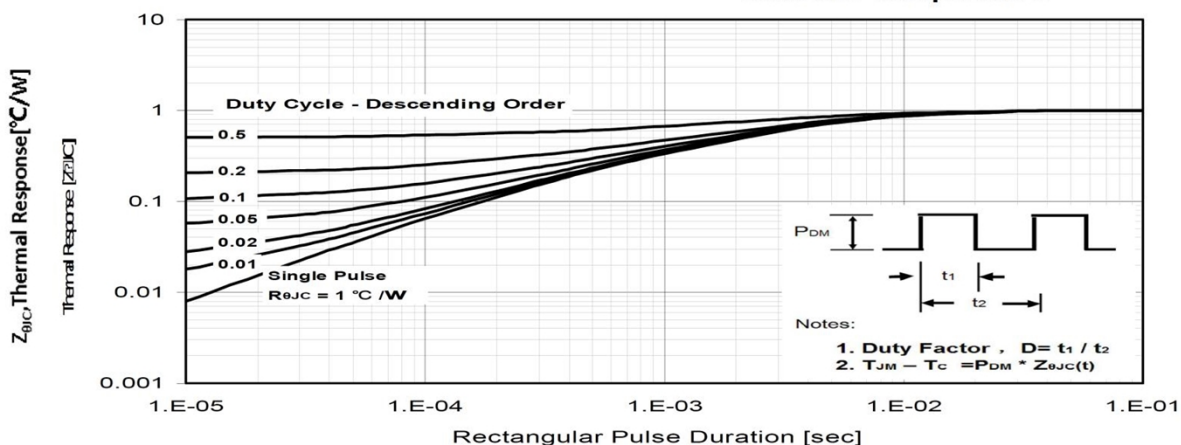
Normalized On Resistance vs Junction Temperature



Maximum Safe Operating

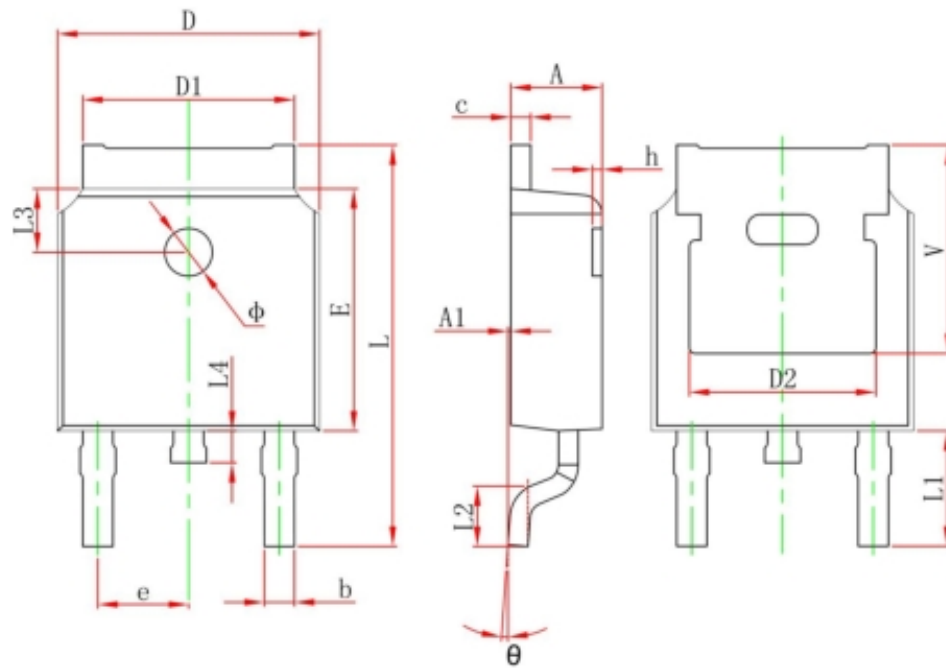


Normalized Threshold Voltage vs Junction Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Case

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.	