

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	60mΩ@10V	15A

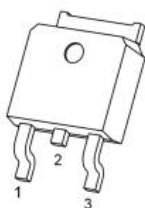
Feature

- $V_{DS} = 100V$, $I_D = 15A$
 $R_{DS(on)} < 75m\Omega$ @ $V_{GS} = 10V$
 $R_{DS(on)} < 100m\Omega$ @ $V_{GS} = 4.5V$
- Green Device Available
- Low Gate Charge
- Advanced High Cell Density Trench Technology
- 100% EAS Guaranteed

Application

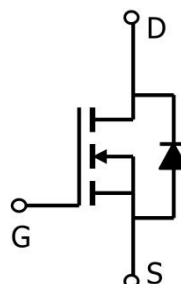
- Power Management Switches
- DC/DC Converters

Package

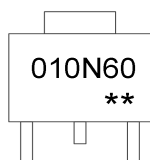


TO-252(G:1 D:2 S:3)

Circuit diagram



Marking



010N60 : Product code
** : Week code.

**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current@10V	TC=25°C	I_D	15	A
	TC=100°C		10	
Pulsed Drain Current		I_{DM}	58	A
Single Pulse Avalanche Energy ¹		E_{AS}	3.2	mJ
Avalanche Current		I_{AS}	8	A
Total Power Dissipation	TC=25°C	P_D	41.7	W
Thermal Resistance from Junction-to-Ambient		$R_{\theta JA}$	50	°C/W
Thermal Resistance from Junction-to-Case		$R_{\theta JC}$	3	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

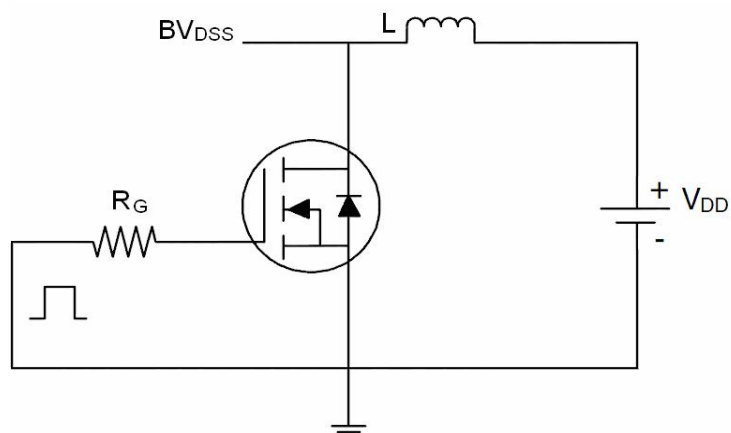
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V ID=250μA	100	-	-	V
Zero Gate Voltage Drain Current	IDSS	VDS=100V,VGS=0V	-	-	1	μA
Gate-Body Leakage Current	IGSS	VGS=±20V,VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS,ID=250μA	1.2	-	2.5	V
Drain-Source On-State Resistance	RDS(ON)	VGS=10V, ID=5A	-	60	75	mΩ
		VGS=4.5V, ID=3A	-	75	100	
Dynamic Characteristics						
Input Capacitance	Ciss	VDS = 15V, VGS = 0V, f =1MHz	-	1100	-	PF
Output Capacitance	Coss		-	55	-	
Reverse Transfer Capacitance	Crss		-	40	-	
Switching Characteristics						
Turn-on Delay Time	td(on)	VGS =10V, VDD =50V, RG = 3Ω, ID= 5A	-	3.9	-	nS
Turn-on Rise Time	tr		-	26	-	
Turn-Off Delay Time	td(off)		-	16.2	-	
Turn-Off Fall Time	tf		-	8.9	-	
Total Gate Charge	Qg	VGS = 10V,VDS = 50V, ID=5A	-	12		nC
Gate-Source Charge	Qgs		-	2.9	-	
Gate-Drain Charge	Qgd		-	1.8	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V,IS=1A	-	-	1.2	V
Diode Forward Current	IS		-	-	15	A

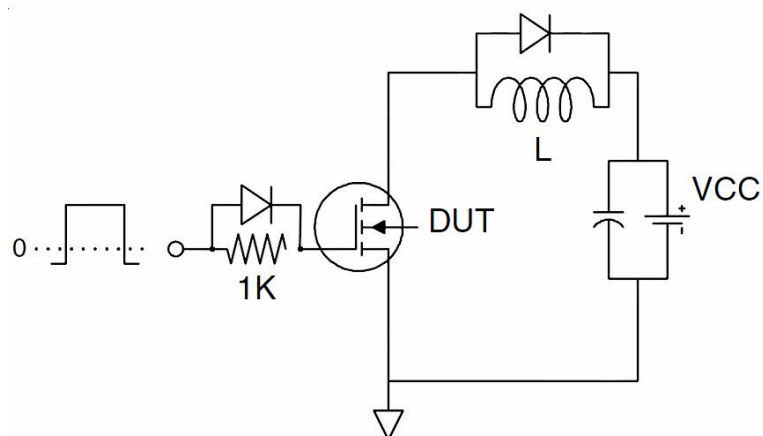
Notes:1. EAS condition: $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=8A$

Test Circuit

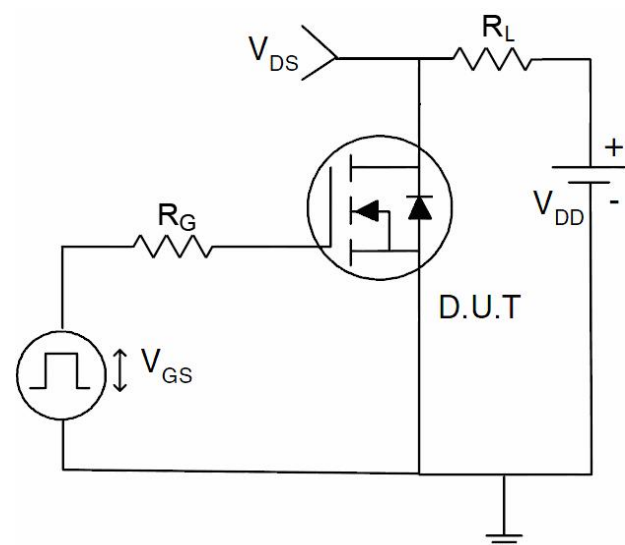
1) EAS Test Circuits



2) Gate Charge Test Circuit

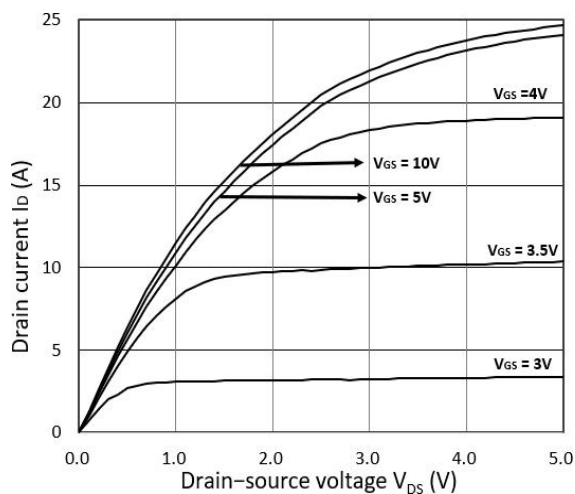


3) Switch Time Test Circuit

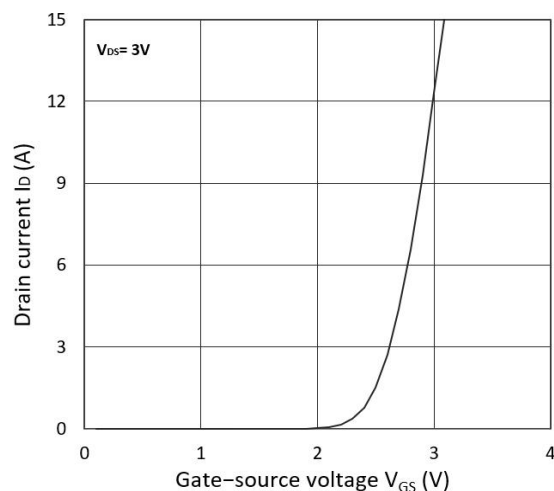




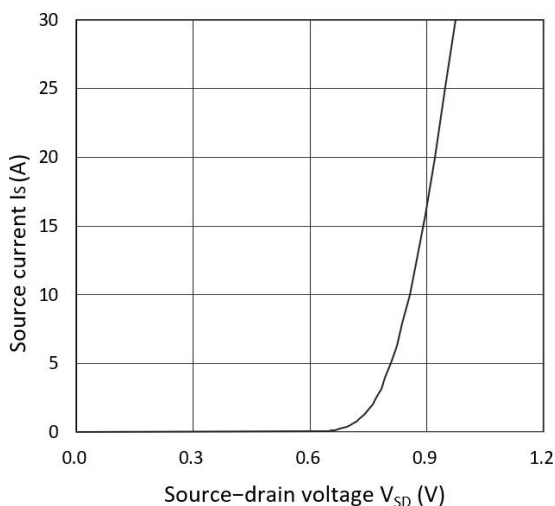
Typical Characteristics



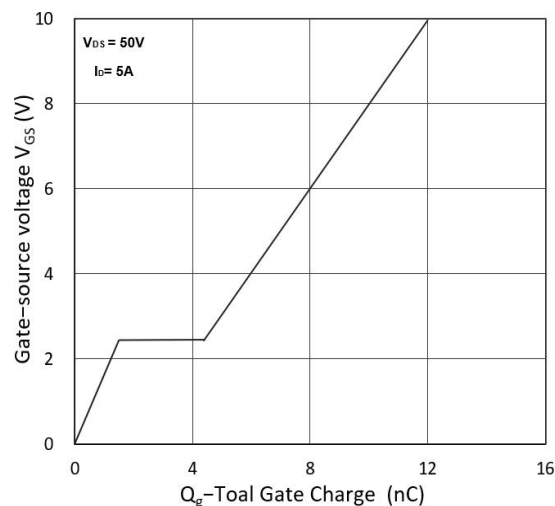
Output Characteristics



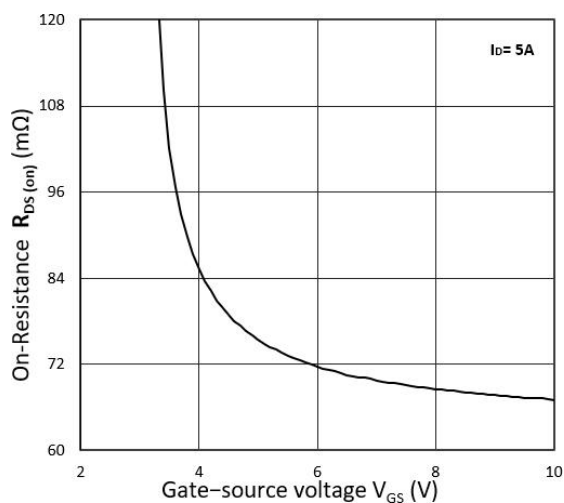
Transfer Characteristics



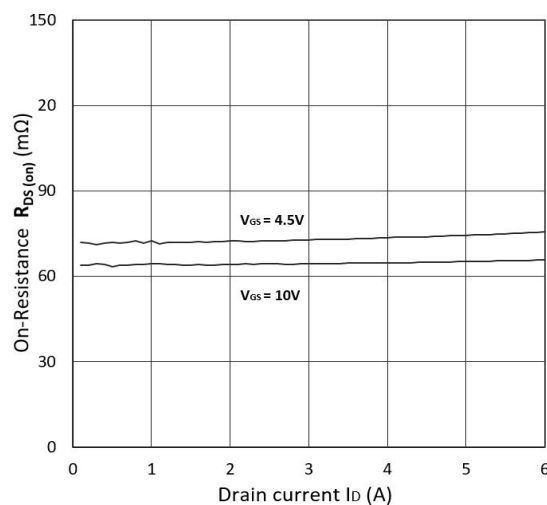
Forward Characteristics of Reverse



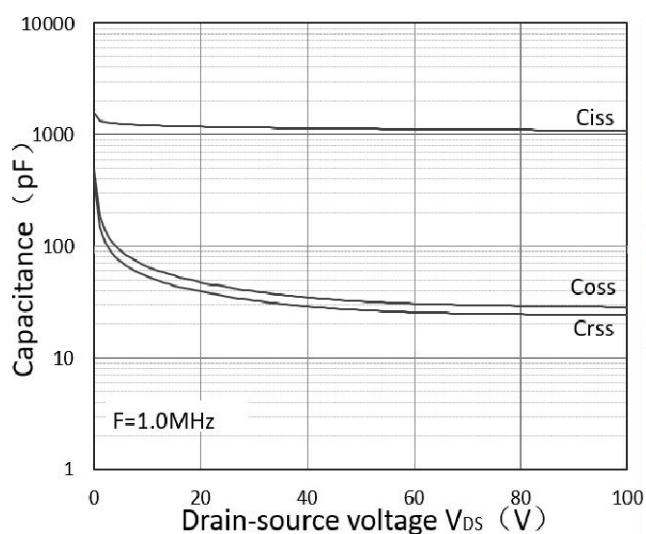
Gate Charge Characteristics



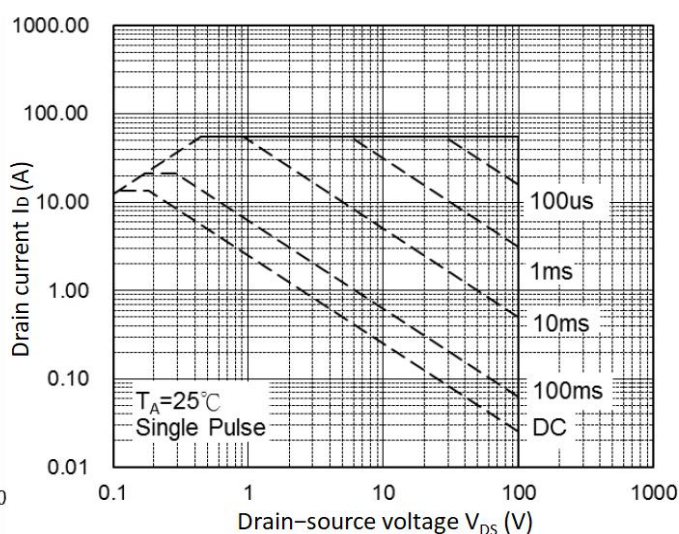
$R_{DS(on)}$ vs. V_{GS}



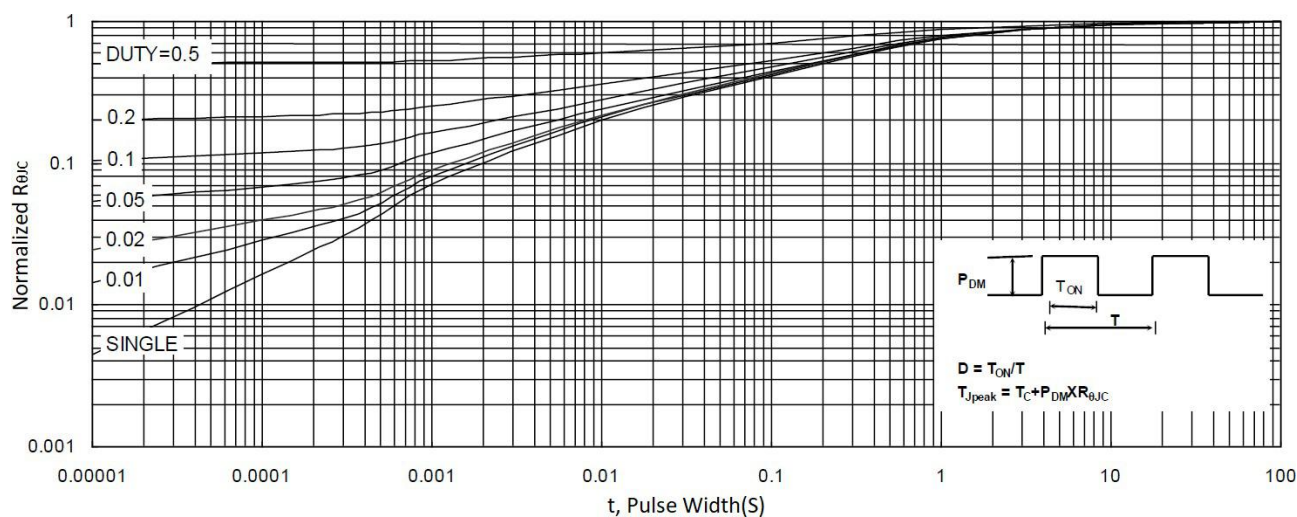
$R_{DS(on)}$ vs. I_D



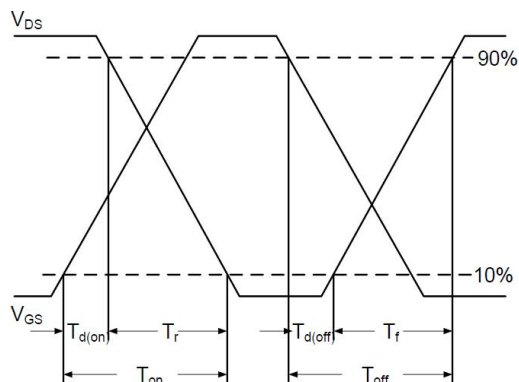
Capacitance Characteristics



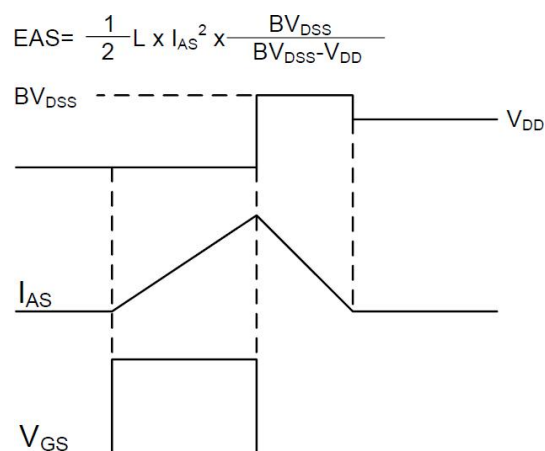
Safe Operating Area



Normalized Maximum Transient Thermal Impedance



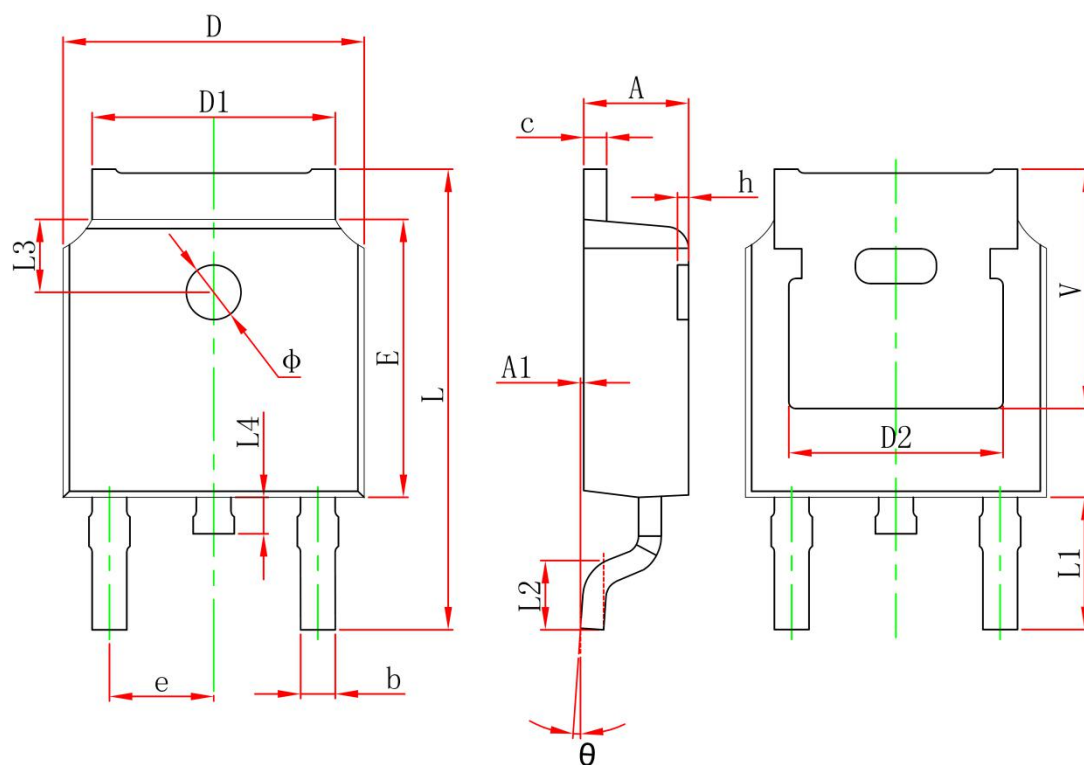
Switching Time Waveform



Unclamped Inductive Switching Waveform



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.	