Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	70mΩ@10V	15A

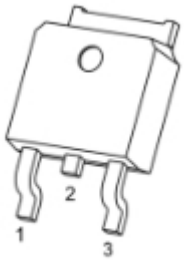
Feature

- V_{DS}= 100V, I_D = 15A
  $R_{DS(on)}$ < 85mΩ @ V_{GS} = 10V
  $R_{DS(on)}$ < 110mΩ @ V_{GS} = 4.5V
- Green Device Available
- Low Gate Charge
- Advanced High Cell Density Trench Technology
- 100% EAS Guaranteed

Application

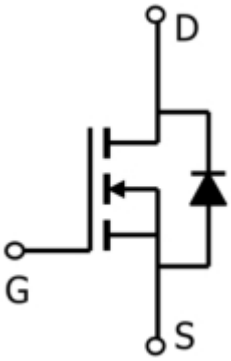
- Power Management Switches
- DC/DC Converters

Package



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

Circuit diagram



Marking

010N70 : Product code

** : Week code.

Absolute maximum ratings

(T_a=25℃ 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	T_A=25℃	I_D	15	W
	T_C=25℃		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	T_C=25℃	P_D	41.7	W
Thermal Resistance,Junction-to-Ambient		$R_{\theta JA}$	50	℃/ W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	3	℃/ W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

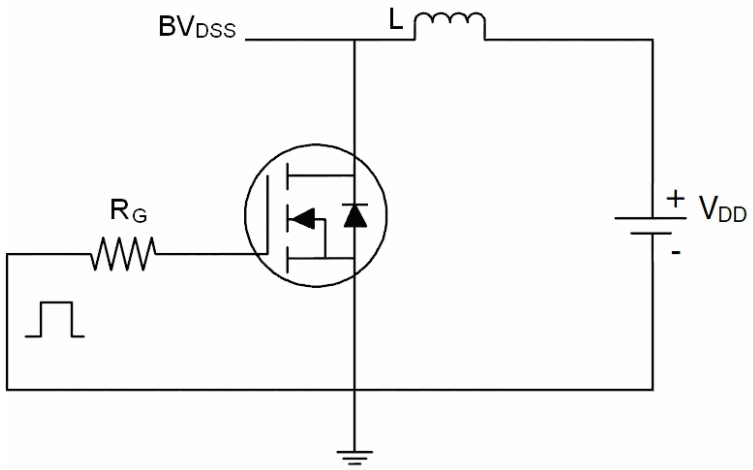
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D =250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =100V,V_{GS} = 0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V , V_{DS}=0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2		2.5	V
Drain-Source On-State Resistance[2]	$R_{DS(on)}$	V_{GS} =10V, I_D =5A		70	85	mΩ
		V_{GS} =4.5V, I_D =3A		85	110	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, f=1MHz		1100		pF
Output Capacitance	C_{oss}			55		
Reverse Transfer Capacitance	C_{rss}			40		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	V_{GS}=10V, V_{DD}=50V, R_G=3Ω, I_D=5A		3.9		nS
Rise Time	T_r			26		
Turn-Off Delay Time	$T_{d(off)}$			16.2		
Fall Time	T_f			8.9		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=5A		12		nC
Gate-Source Charge	Q_{gS}			2.9		
Gate-Drain Charge	Q_{gd}			1.8		
Drain-Source Diode Characteristics						
Diode forward voltage	V_{SD}	V_{GS}=0V, I_S=1A			1.2	V
Diode Forward Current	I_S				15	A

Notes:

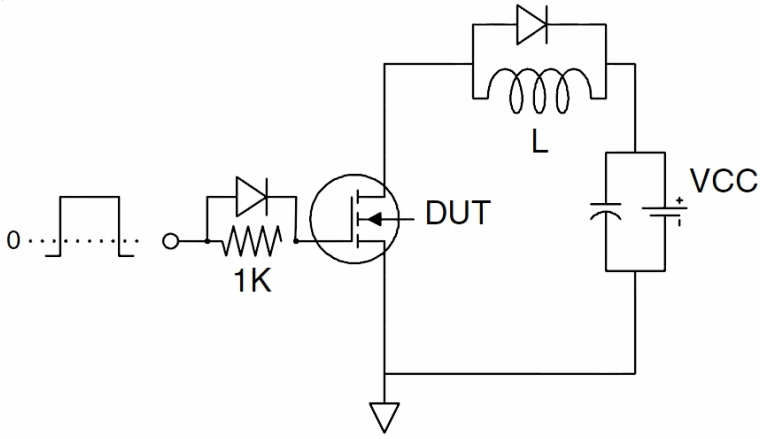
1. EAS condition: V_{DD}=25V,VGS=10V,L=0.1mH,I_{AS}=8A

Test Circuit

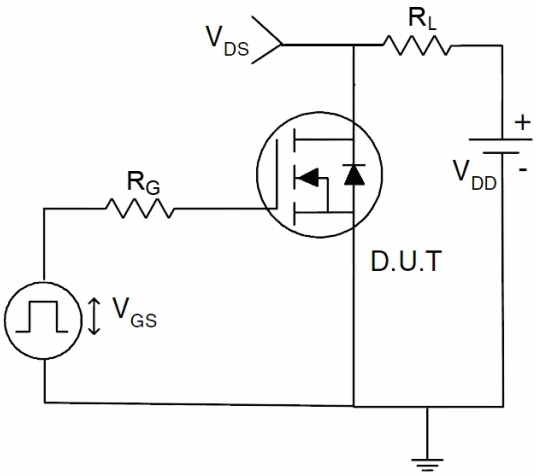
- EAS Test Circuits



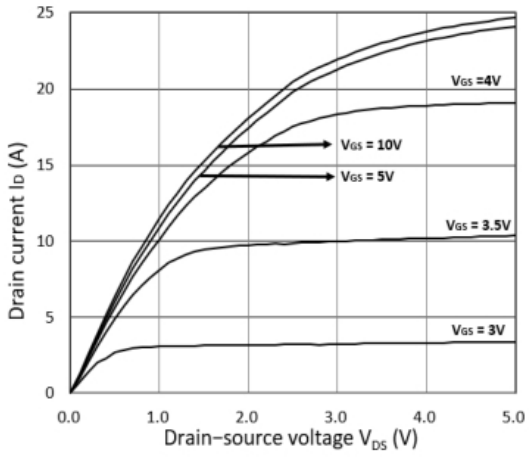
- Gate Charge Test Circuit



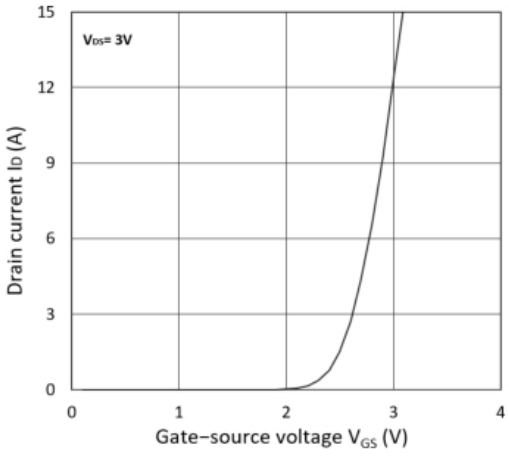
- Switch Time Test Circuit



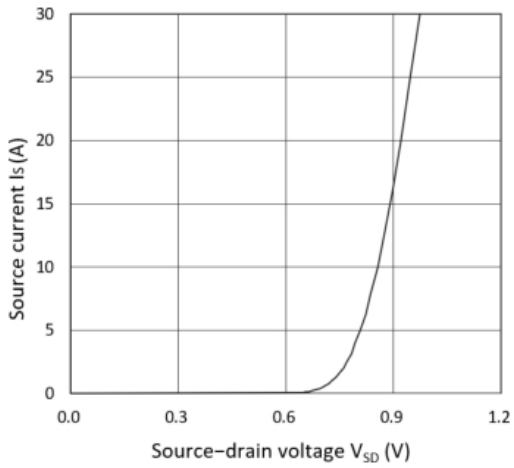
Typical Characteristics



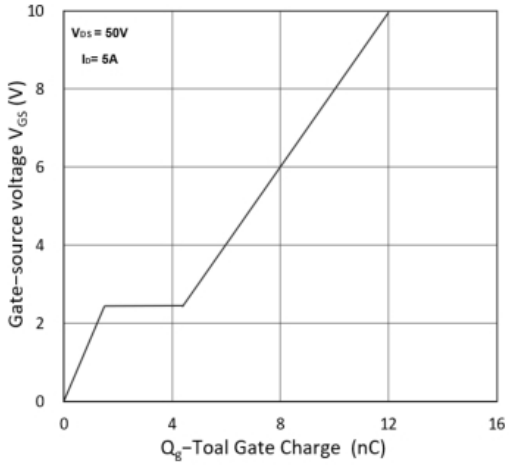
Output Characteristics



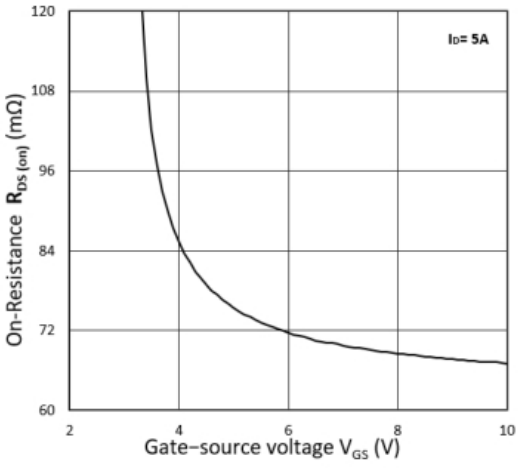
Transfer Characteristics



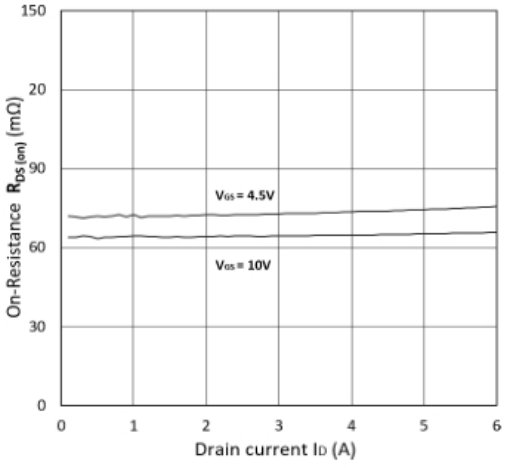
Forward Characteristics of Reverse



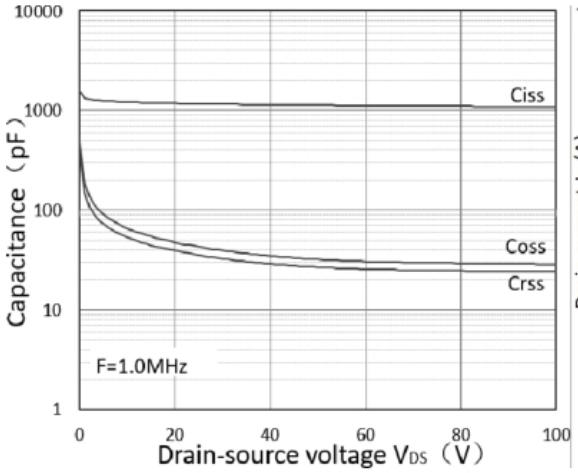
Gate Charge Characteristics



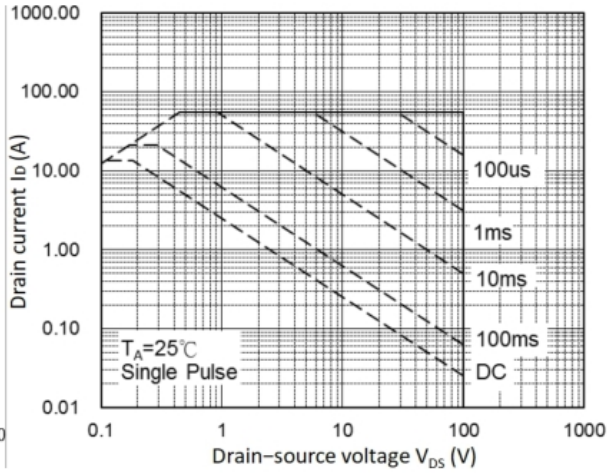
$R_{DS(on)}$ vs. V_{GS}



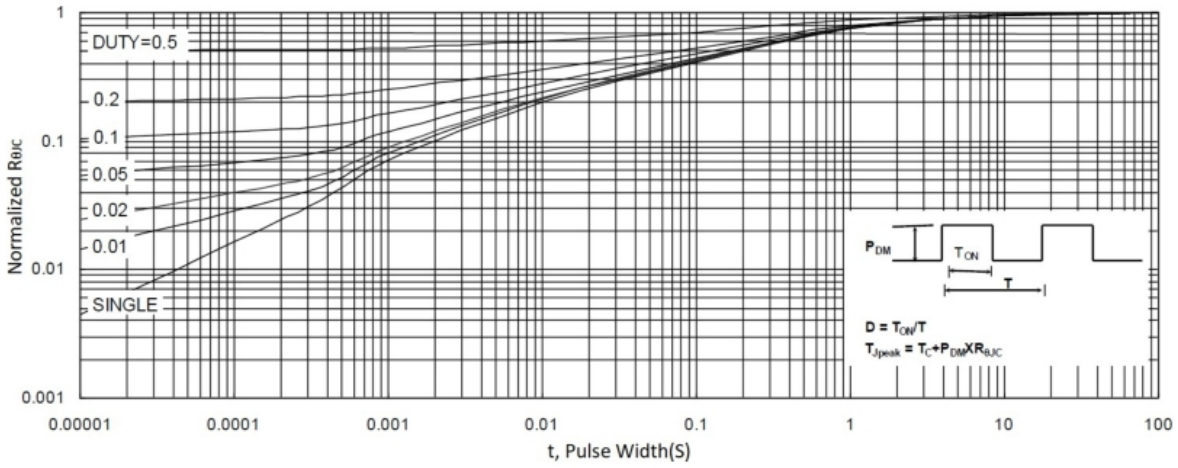
$R_{DS(on)}$ vs. I_D



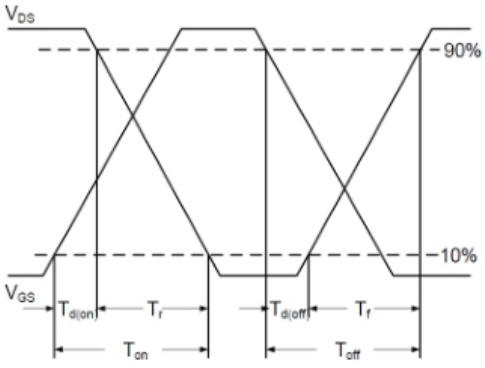
Capacitance Characteristics



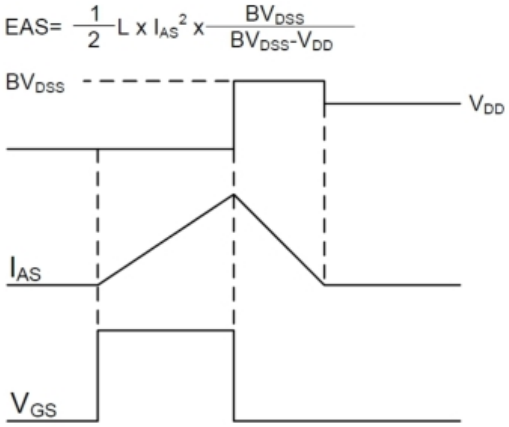
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

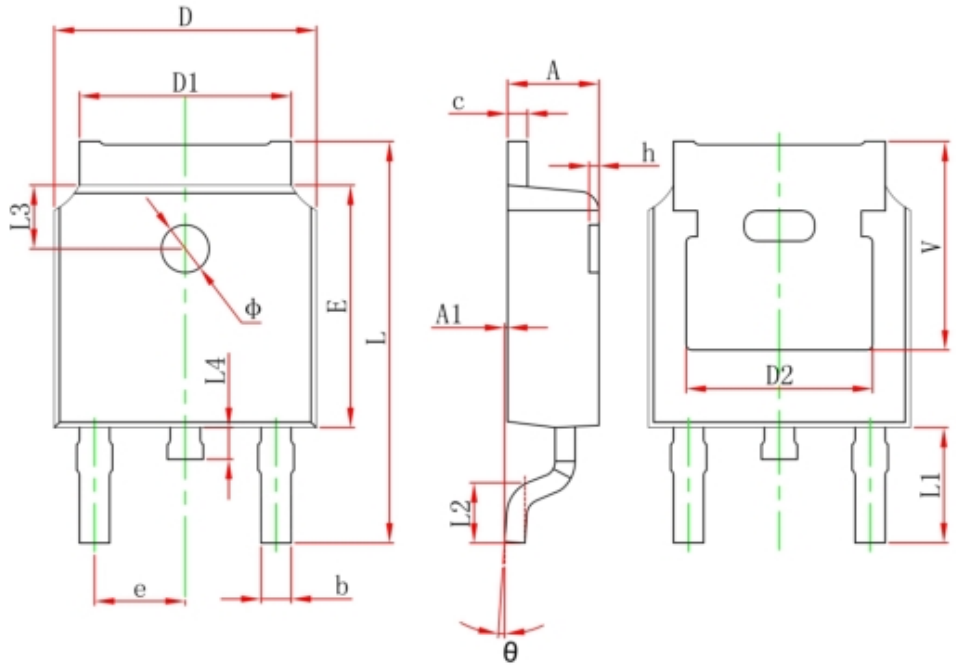


Switching Time Waveform



Unclamped Inductive Switching Waveform

SOP-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.	