Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	45mΩ@10V	15A
	60mΩ@4.5V	

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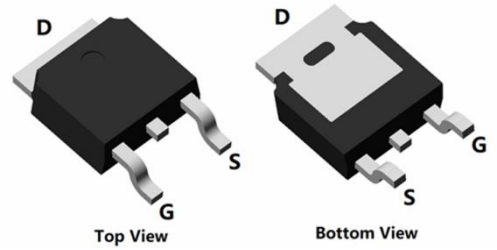
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

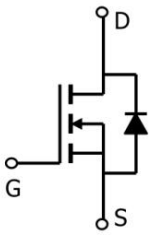
- Power switching application
- Battery management
- Uninterruptible power supply

Package

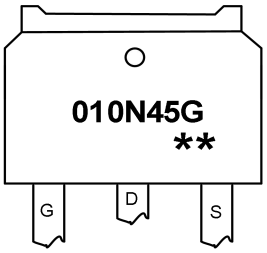


TO-252(1:G 2:D 3:S)

Circuit diagram



Marking



010N45G : **Product code**
****** : **Week code**

Order Information

Device	Package	Unit/Tube
SP010N45GTH	TO-252	2500

Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	I_D	15	A
Continuous Drain Current (Tc=100℃)	I_D	10	A
Pulsed Drain Current	I_{DM}	60	A
Single Pulse Avalanche Energy[1]	E_{AS}	20	mJ
Power Dissipation (Tc=25℃)	P_D	35	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	3.57	℃/W
Storage Temperature Range	T_{STG}	55 to 150	℃
Operating Junction Temperature Range	T_J	55 to 150	℃

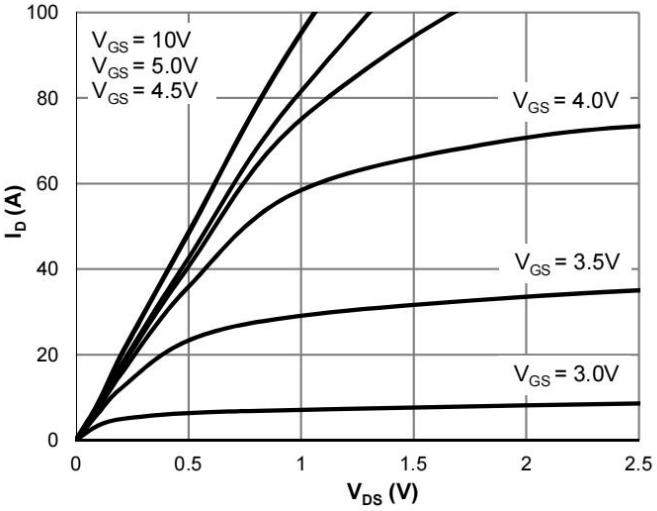
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250μA, V_{GS} = 0V	100	-	-	V
Drain Cut-Off Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V	-	-	1	uA
Gate Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	-	-	±0.1	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.7	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 10A	-	45	56	mΩ
		V_{GS} = 4.5V, I_D = 8A	-	60	80	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} = 0V, f = 1.0MHz	-	392	-	pF
Output Capacitance	C_{oss}		-	94	-	
Reverse Transfer Capacitance	C_{rss}		-	3.4	-	
Total Gate Charge	Q_g	V_{DS}=50V , VGS=10V , ID=10A	-	9	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	
Gate-Drain Charge	Q_{gd}		-	2	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{GS} = 10V, V_{DS} =50V, ID=10A R_G = 3Ω	-	4.5	-	nS
Rise Time	t_r		-	5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	13	-	
Fall Time	t_f		-	5	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	15	A
Reverse Recovery Time	Trr	I_S=10A, di/dt=100A/us, T_J=25℃	-	2	-	nS
Reverse Recovery Charge	Qrr		-	35	-	nC

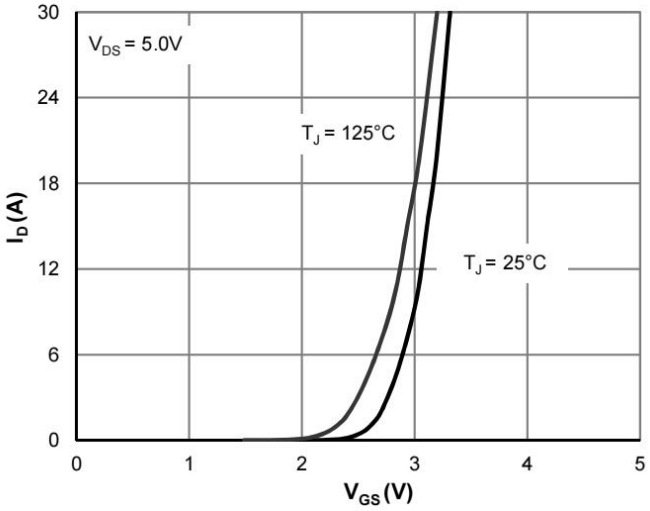
Note：

1. The EAS test condition is VDD=50V,VGS=10V,L=0.5mH,RG=25Ω

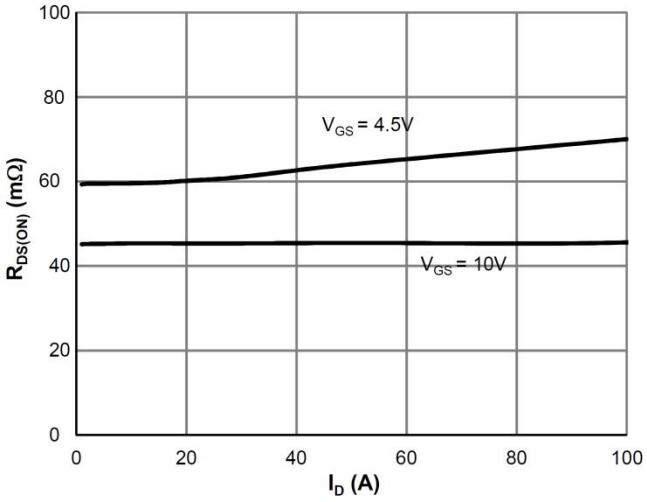
Typical Characteristics



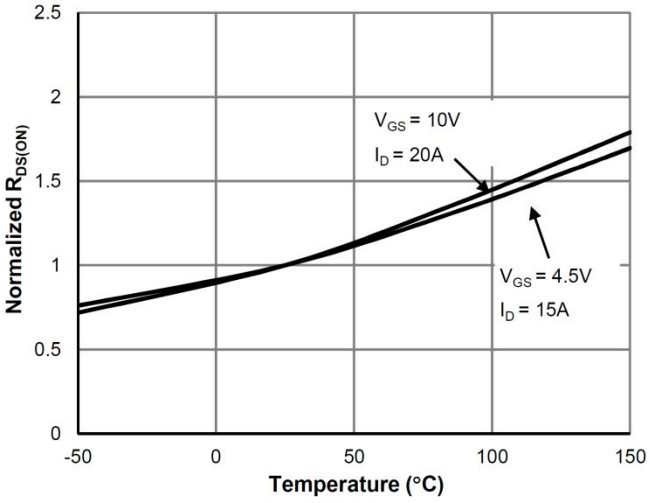
Typical Output Characteristics



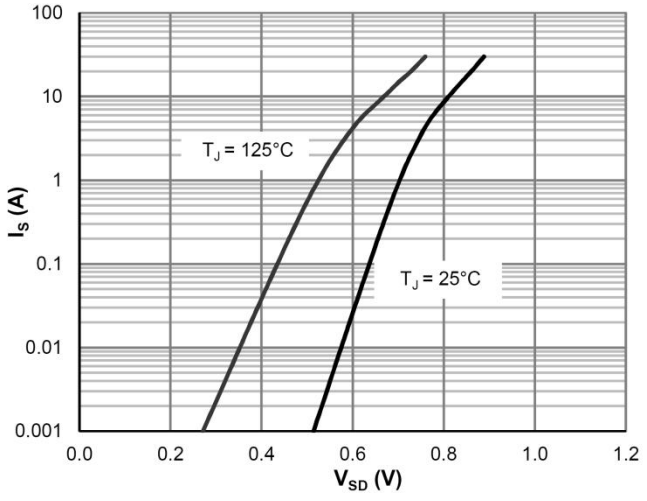
Transfer Characteristics



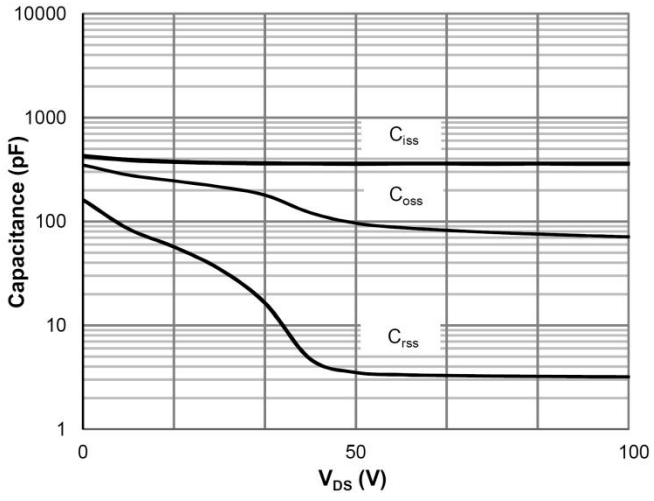
On-Resistance vs.Drain Current



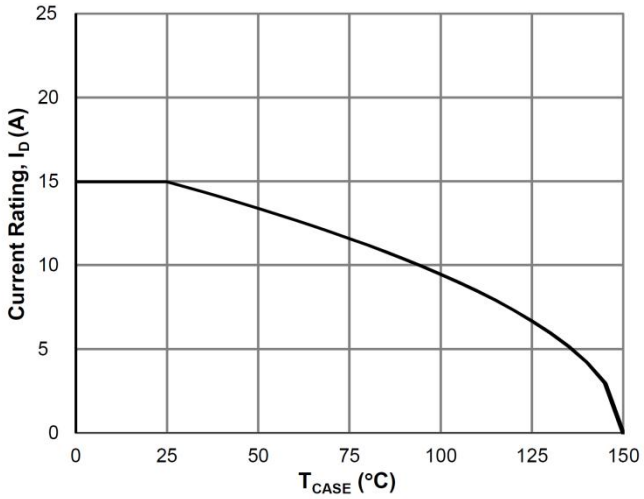
On-Resistance vs.Junction Temperature



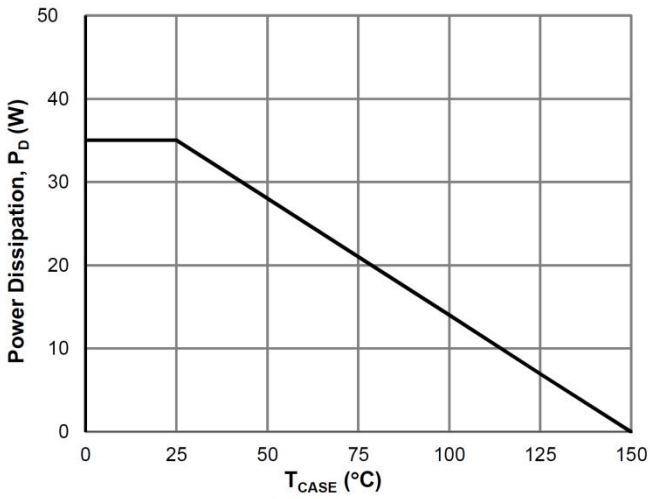
Body-Diode Characteristics



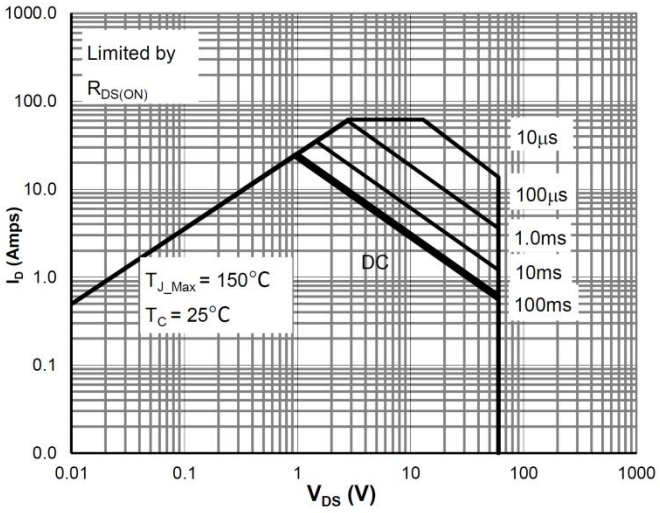
Capacitance Characteristics



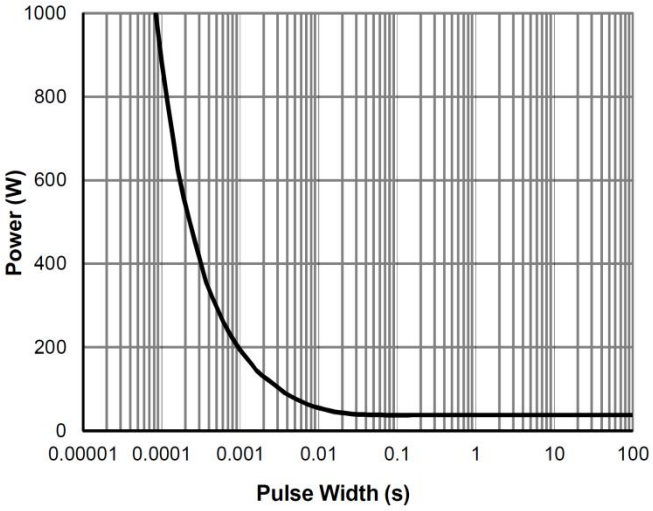
Current De-rating



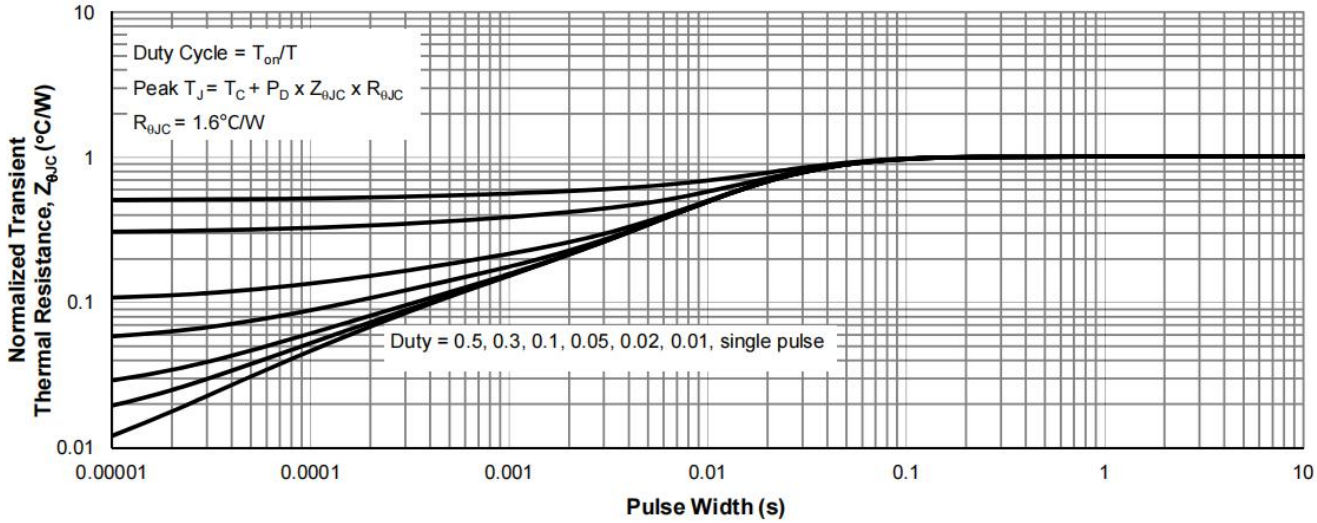
Power De-rating



Maximum Safe Operating Area

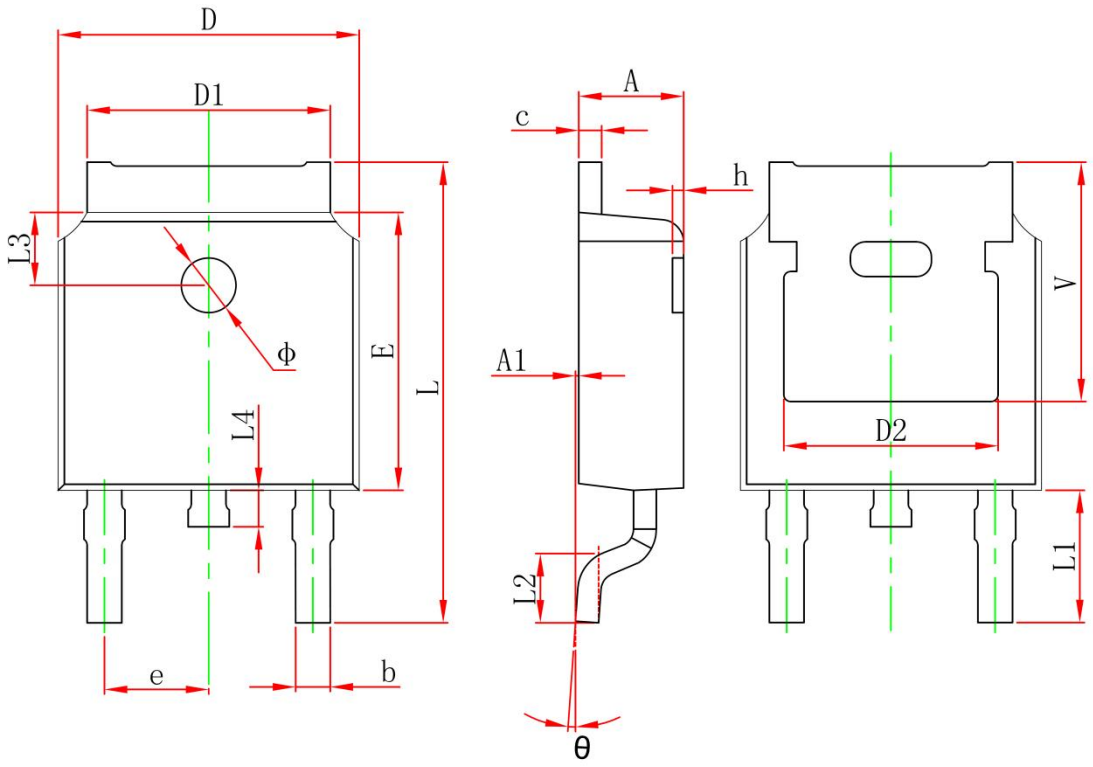


Single Pulse Power Rating,Junction-to-Case



Normalized Maximum 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.	