

General Description

The MY150N03K is the high cell density trenched N-CH MOSFETs, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

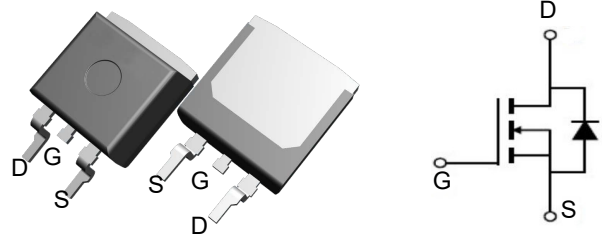


Features

V_{DSS}	30	V
I_D	150	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	1.6	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	3.2	$m\Omega$

Application

- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY150N03K	TO-263	150N03	800

Absolute Maximum Ratings ($T_c=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Max.	Units	
V_{DSS}	Drain-Source Voltage	30	V	
V_{GSS}	Gate-Source Voltage	± 20	V	
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	150	A
		$T_C = 100^\circ\text{C}$	110	A
I_{DM}	Pulsed Drain Current <small>note1</small>	310	A	
EAS	Single Pulsed Avalanche Energy <small>note2</small>	246	mJ	
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	80.3	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.4	$^\circ\text{C}/\text{W}$	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	$^\circ\text{C}$	

Electrical Characteristics at $T_J=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to $25^\circ\text{C}, I_D=1\text{mA}$	---	0.022	---	$V/^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=30A$	---	1.6	3	m Ω
		$V_{GS}=4.5V, I_D=15A$		3.2	4	
$V_{GS(th)}$	Gate Threshold Voltage		1	---	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient	$V_{GS}=V_{DS}, I_D=250\mu A$	---	-6.1	---	mV/ $^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	2	μA
		$V_{DS}=24V, V_{GS}=0V, T_J=55^\circ\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=30A$	---	60	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	0.9	---	
Q_g	Total Gate Charge (4.5V)	$V_{DS}=15V, V_{GS}=10V, I_D=15A$	---	56.9	---	nC
Q_{gs}	Gate-Source Charge		---	13.8	---	
Q_{gd}	Gate-Drain Charge		---	23.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, V_{GS}=10V, R_G=3.3, I_D=1A$	---	20.1	---	ns
T_r	Rise Time		---	6.3	---	
$T_{d(off)}$	Turn-Off Delay Time		---	124.6	---	
T_f	Fall Time		---	15.8	---	
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	5935	---	pF
C_{oss}	Output Capacitance		---	725	---	
C_{rss}	Reverse Transfer Capacitance		---	538	---	
I_S	Continuous Source Current ^{1,5}	$V_G=V_D=0V, \text{Force Current}$	---	---	155	A
I_{SM}	Pulsed Source Current ^{2,5}		---	---	310	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_S=A, T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=70.2A$
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation. 6. Package limitation current is 85A.

Typical Characteristics

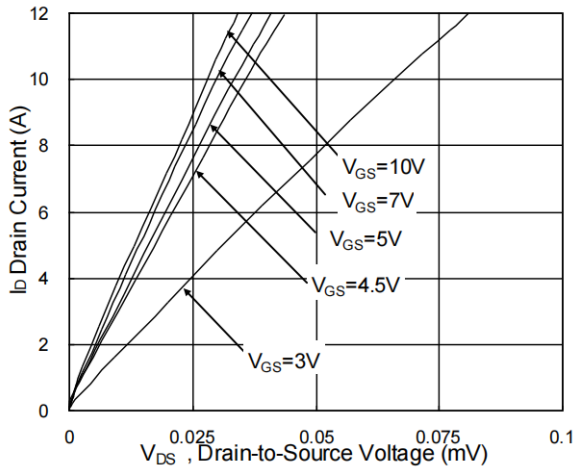


Fig.1 Typical Output Characteristics

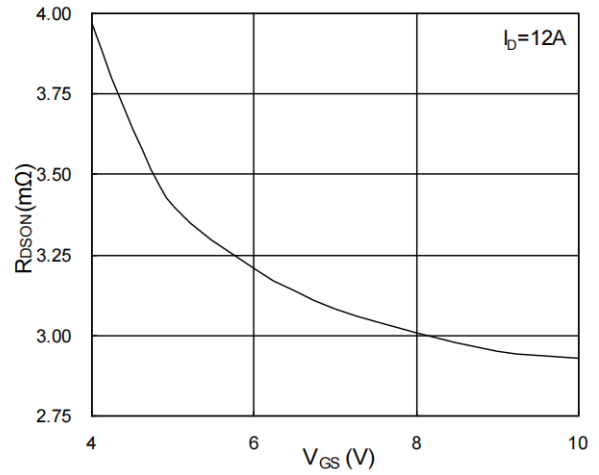


Fig.2 On-Resistance v.s Gate-Source

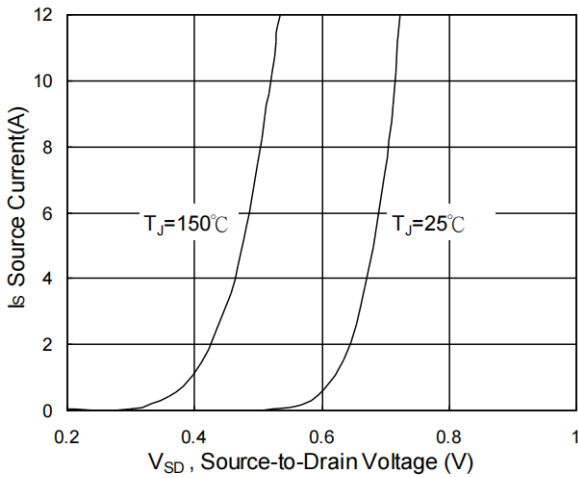


Fig.3 Forward Characteristics of Reverse

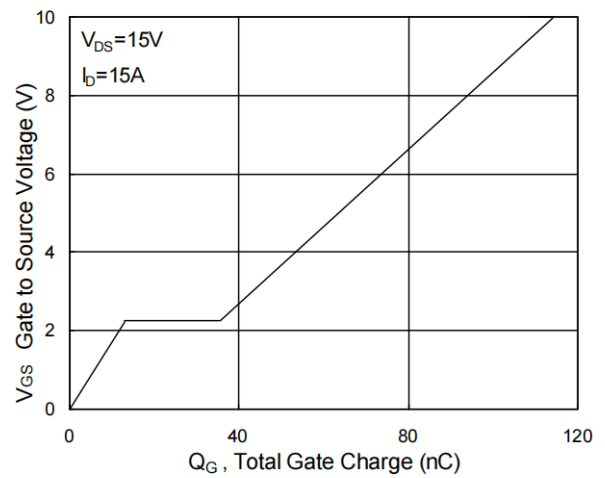


Fig.4 Gate-Charge Characteristics

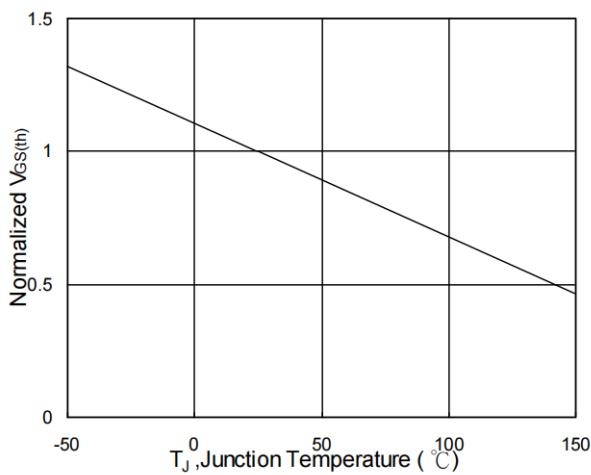


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

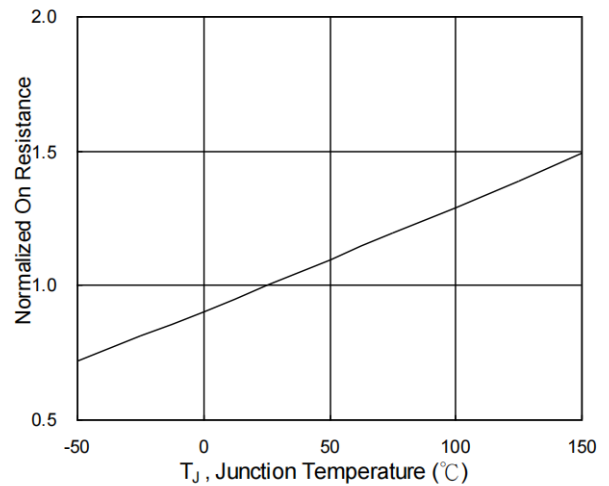


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

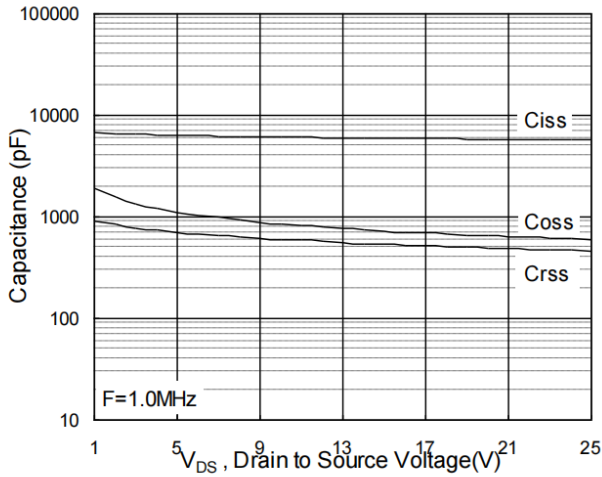


Fig.7 Capacitance

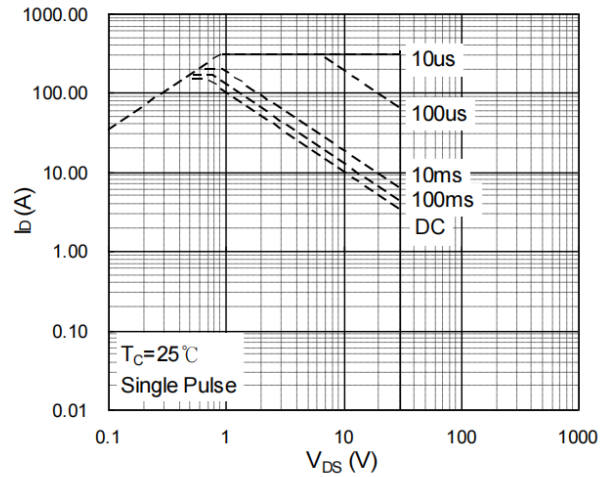


Fig.8 Safe Operating Area

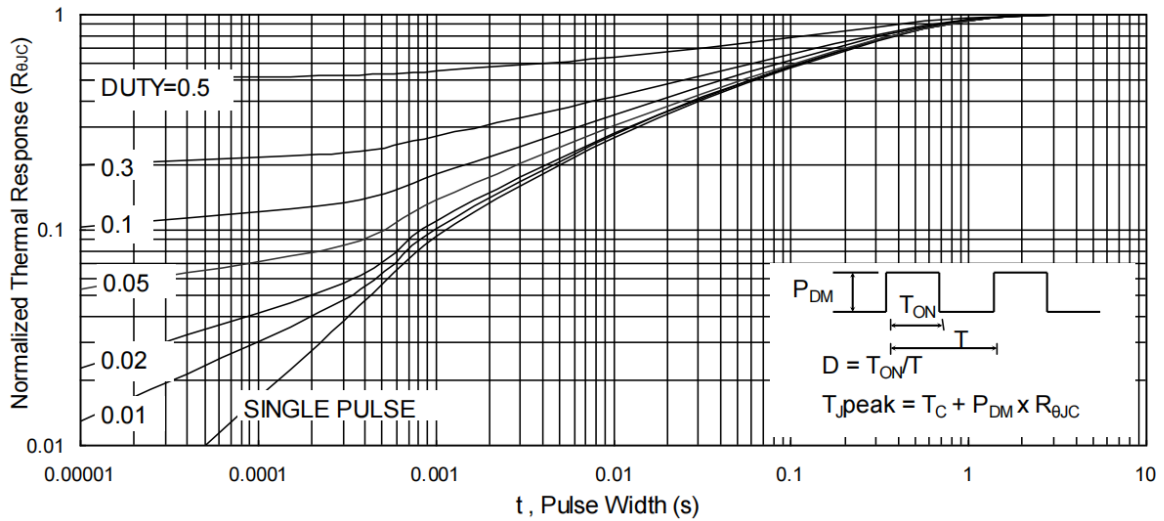


Fig.9 Normalized Maximum Transient Thermal Impedance

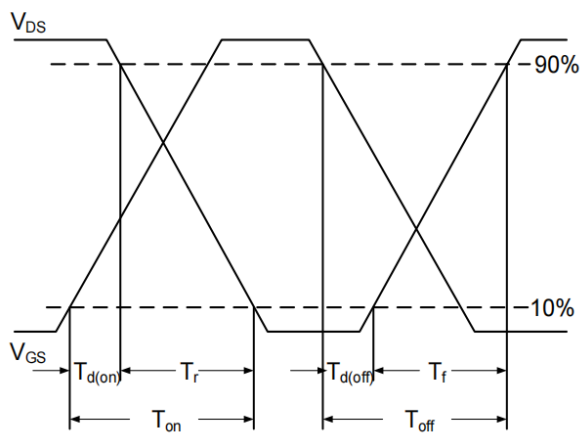


Fig.10 Switching Time Waveform

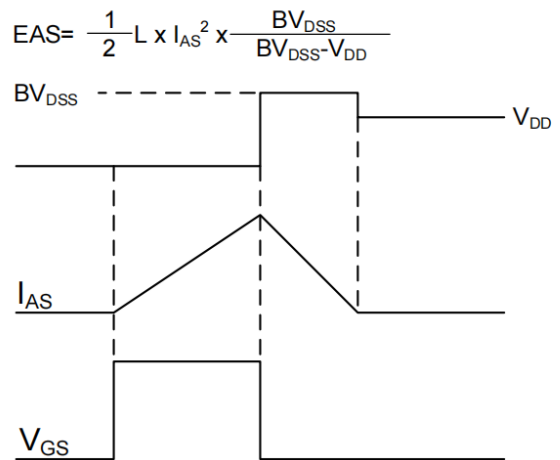
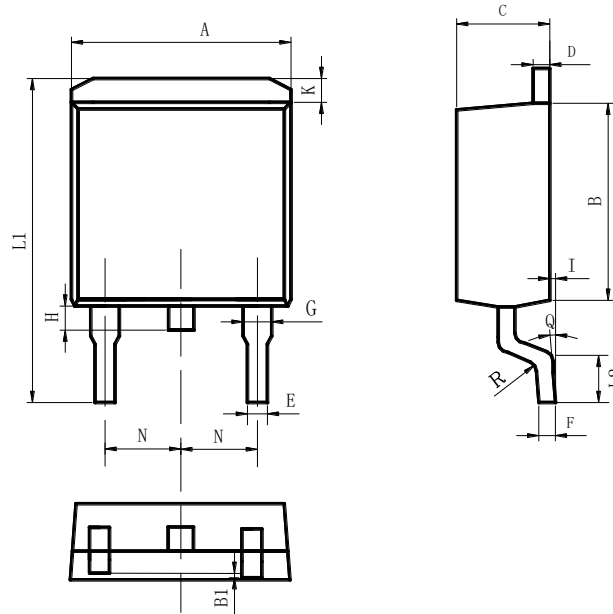


Fig.11 Unclamped Inductive Waveform

Package Mechanical Data-TO-263 Single



Items	Values(mm)	
	MIN	MAX
A	9.80	10.40
B	8.90	9.50
B1	0	0.10
C	4.40	4.80
D	1.16	1.37
E	0.70	0.95
F	0.30	0.60
G	1.07	1.47
H	1.30	1.80
K	0.95	1.37
L1	14.50	16.50
L2	1.90	2.90
I	0	0.2
Q	0°	8°
R	0.4	
N	2.39	2.69