General Description

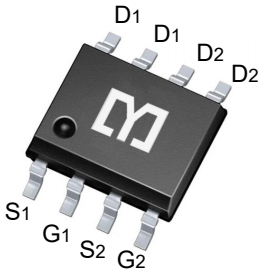
The MY3D02C is the highest performance trench N-ch MOSFETs with extreme high ell density,which provide excellent R_{DSON} and gate charge for most of the small power switching and load switch applications.

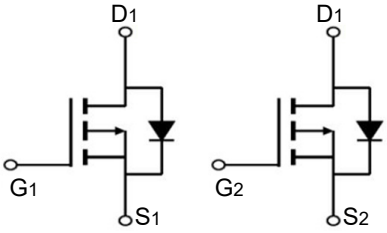
Features

V_{DSS}	-20	V
I_D	-3	A
$R_{DS(ON)}$(atV_{GS}=4.5V)	<-90	mΩ
$R_{DS(ON)}$(atV_{GS}=2.5V)	<-140	mΩ

Application

- Battery protection
- Load switch
- PWM application





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY3D02C	SOP-8	3D02C	3000

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous	I_D	-3	A
Drain Current-Pulsed (Note 1)	I_{DM}	-8	A
Maximum Power Dissipation	P_D	2.6	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃
Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	49	℃/W

Electrical Characteristics (T_A=25 ℃, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-20	-23	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.4	-0.7	-1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4.2A	-	70	90	m
		V_{GS}=-2.5V, I_D=-2.9A	-	100	140	m
Forward Transconductance	g_{FS}	V_{DS}=-15V,I_D=-4.5A	4	7	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz	-	540	-	PF
Output Capacitance	C_{oss}		-	150	-	PF
Reverse Transfer Capacitance	C_{rss}		-	75	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-15V, ID=-1A, V_{GS}=-10V,R_{GEN}=6	-	8	-	nS
Turn-on Rise Time	t_r		-	14	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	18	-	nS
Turn-Off Fall Time	t_f		-	10	-	nS
Total Gate Charge	Q_g	V_{DS}=-4.5V,I_D=-4.2A,V_{GS}=-8V	-	12	-	nC
Gate-Source Charge	Q_{gs}		-	2.4	-	nC
Gate-Drain Charge	Q_{gd}		-	3.2	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-4.2A	-	-	-1.0	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

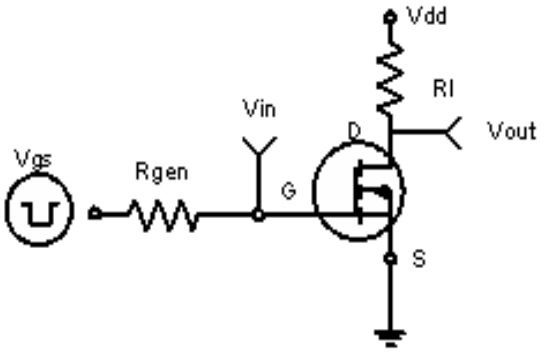


Figure 1:Switching Test Circuit

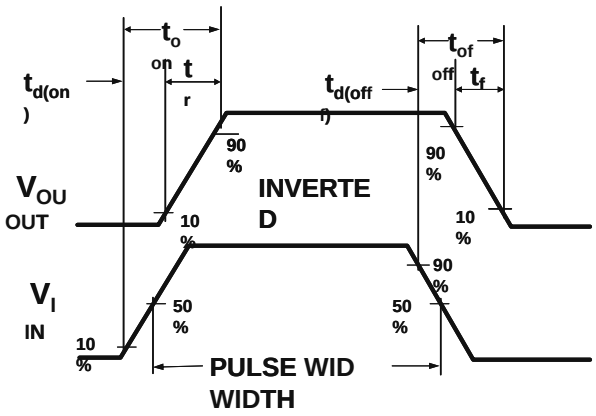
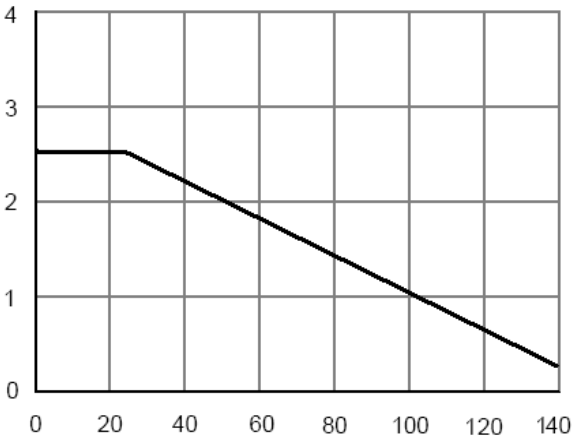
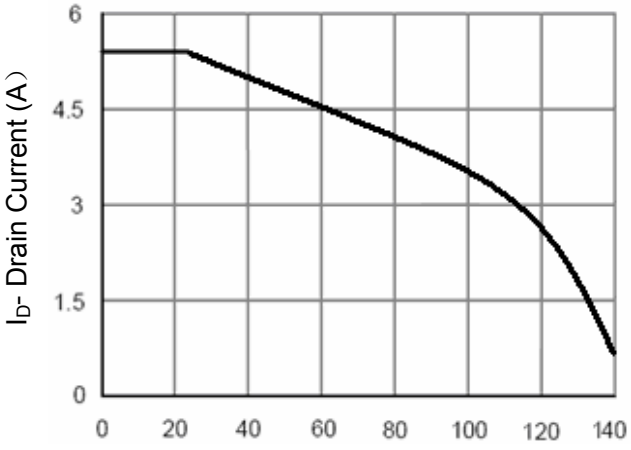


Figure 2:Switching Waveforms



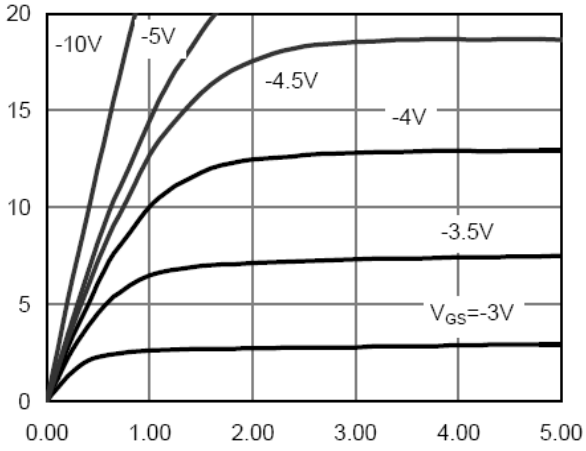
T_J-Junction Temperature(℃)

Figure 3 Power Dissipation



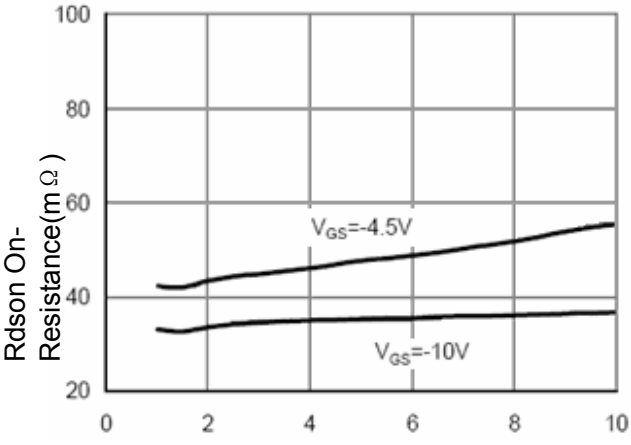
T_J-Junction Temperature(℃)

Figure 4 Drain Current



Vds Drain-Source Voltage (V)

Figure 5 Output Characteristics



I_D- Drain Current (A)

Figure 6 Drain-Source On-Resistance

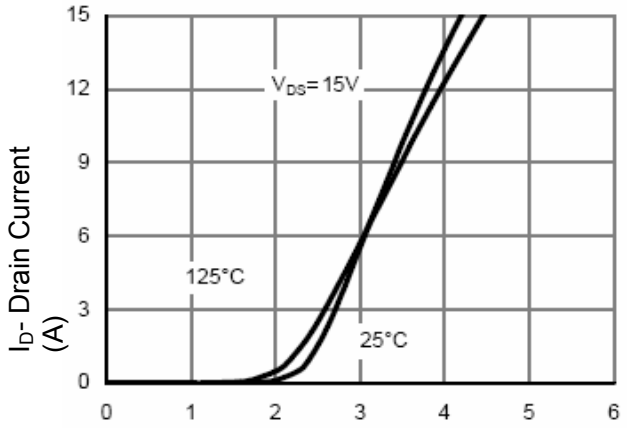


Figure 7 Transfer Characteristics

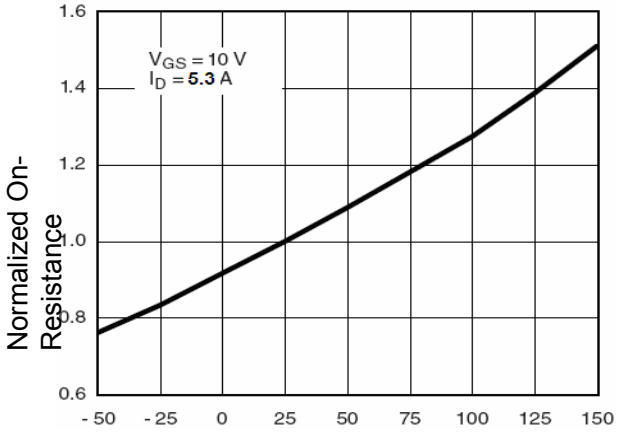


Figure 8 Drain-Source On-Resistance

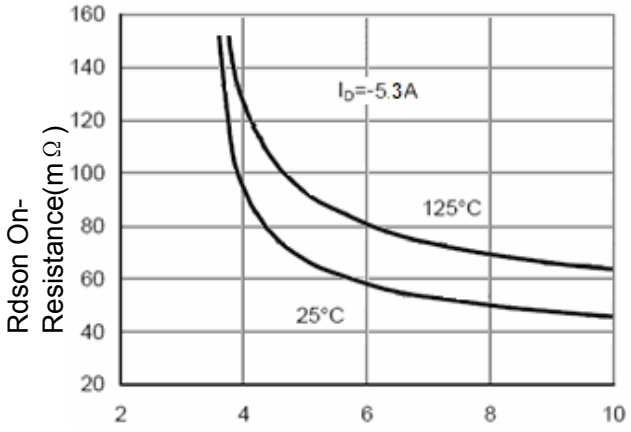


Figure 9 Rdson vs Vgs

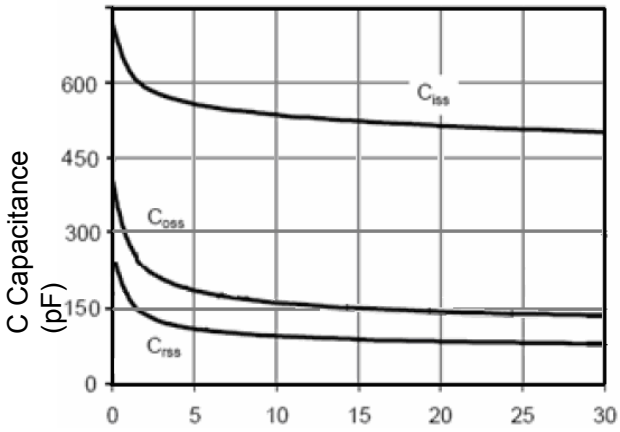


Figure 10 Capacitance vs Vds

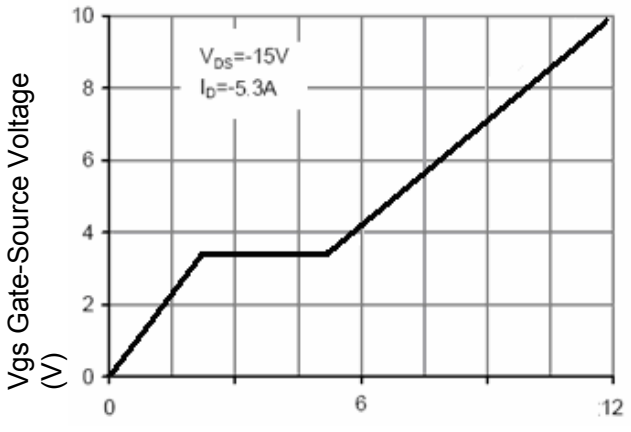


Figure 11 Gate Charge

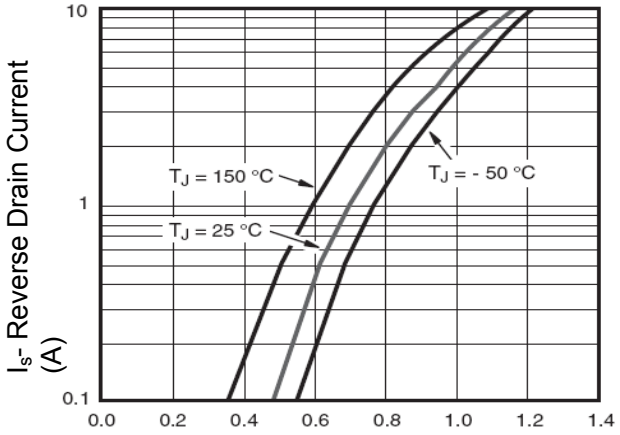


Figure 12 Source- Drain Diode Forward

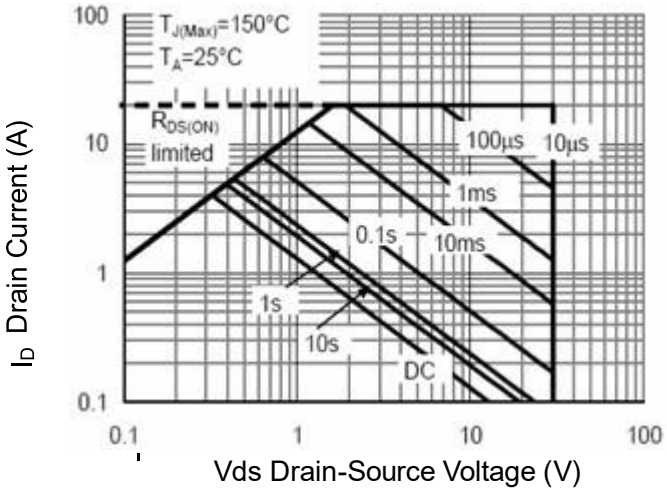


Figure 13 Safe Operation Area

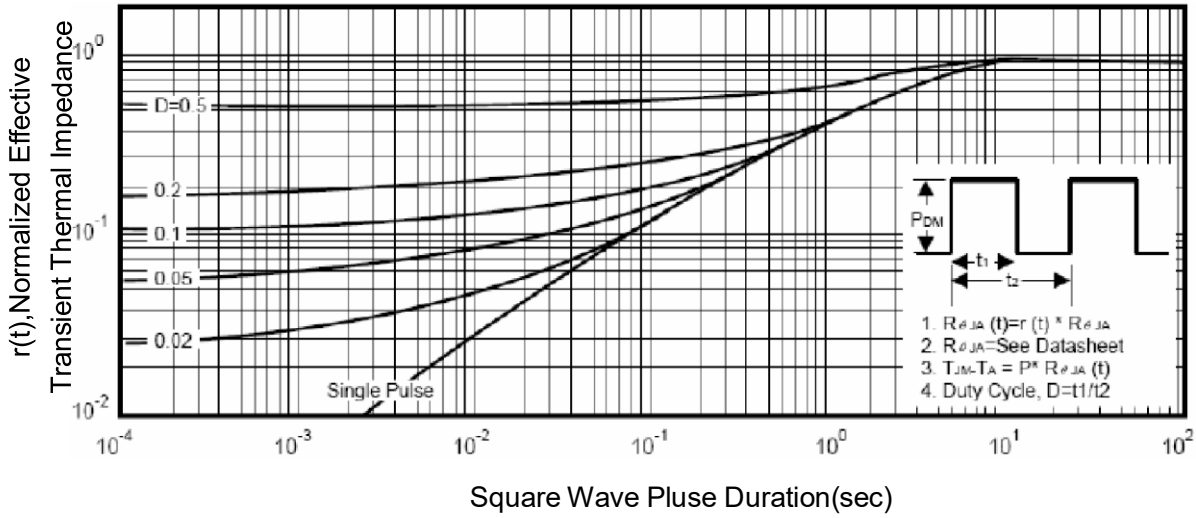
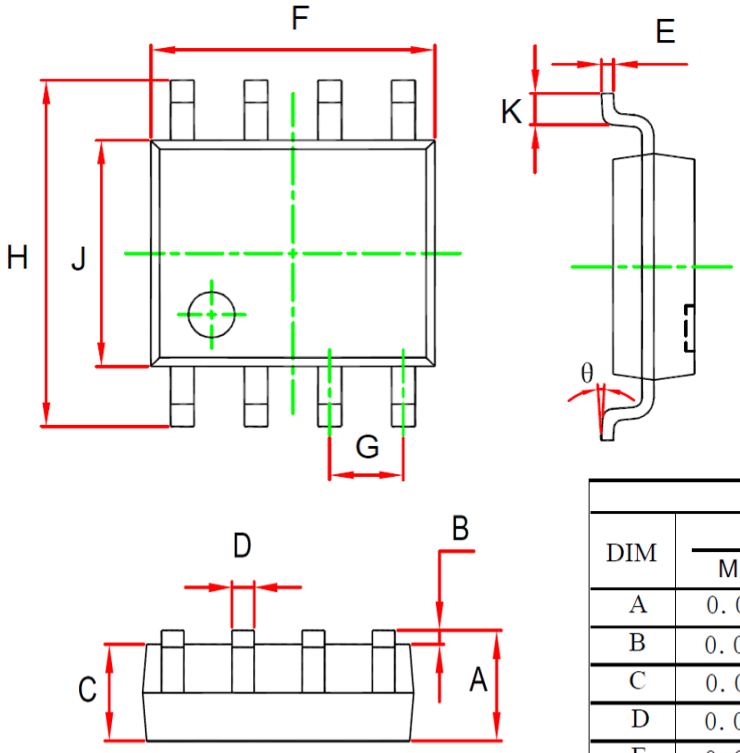


Figure 14 Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-SOP-8



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.350	1.750	
B	0.004	0.010	0.100	0.250	
C	0.053	0.061	1.350	1.550	
D	0.013	0.020	0.330	0.510	
E	0.007	0.010	0.170	0.250	
F	0.189	0.197	4.800	5.000	
G	0.050 (BSC)		1.270 (BSC)		
H	0.228	0.244	5.800	6.200	
J	0.150	0.157	3.800	4.000	
K	0.016	0.050	0.400	1.270	
θ	0°	8°	0°	8°	