

General Description

The MY18P04C uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

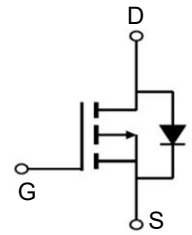
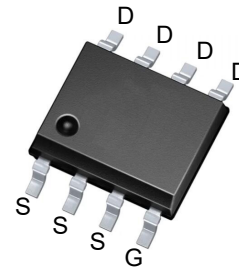


Features

V_{DSS}	-40	V
I_D	-18	A
$R_{DS(ON)}(at V_{GS} = -10V)$	6.4	m Ω
$R_{DS(ON)}(at V_{GS} = -4.5V)$	8.2	m Ω

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY18P04C	SOP-8	MY18P04C	3000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}\text{C}$	Continuous Drain Current, $V_{GS} @ -10V^1$	-18	A
$I_D@T_C=100^{\circ}\text{C}$	Continuous Drain Current, $V_{GS} @ -10V^1$	-12	A
I_{DM}	Pulsed Drain Current ²	-120	A
EAS	Single Pulse Avalanche Energy ³	101.25	mJ
$P_D@T_C=25^{\circ}\text{C}$	Total Power Dissipation ⁴	4.8	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	54	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1.54	$^{\circ}\text{C/W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40	-	-	V
Gate-body Leakage current		I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	$T_J = 25^{\circ}C$	I_{DSS}	$V_{DS} = -40V, V_{GS} = 0V$	-	-	-1	pA
	$T_J = 100^{\circ}C$			-	-	-100	
Gate-Threshold Voltage		$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.6	-2.5	V
Drain-Source on-Resistance ⁴		$R_{DS(on)}$	$V_{GS} = -10V, I_D = -15A$	-	6.4	8.2	mΩ
			$V_{GS} = -4.5V, I_D = -8A$	-	8.2	11	
Forward Transconductance ⁴		g_{fs}	$V_{DS} = -10V, I_D = -20A$	-	104	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C_{iss}	$V_{DS} = -20V, V_{GS} = 0V, f = 1MHz$	-	5295	-	pF
Output Capacitance		C_{oss}		-	430	-	
Reverse Transfer Capacitance		C_{rss}		-	385	-	
Gate Resistance		R_g	$f = 1MHz$	-	4.3	-	Q
Switching Characteristics ⁵							
Total Gate Charge		Q_g	$V_{GS} = -10V, V_{DS} = -20V, I_D = -20A$	-	110	-	nC
Gate-Source Charge		Q_{gs}		-	12.5	-	
Gate-Drain Charge		Q_{gd}		-	23	-	
Turn-on Delay Time		$t_{d(on)}$	$V_{GS} = -10V, V_{DD} = -20V, R_G = 3\Omega, I_D = -20A$	-	16.8	-	ns
Rise Time		t_r		-	10	-	
Turn-off Delay Time		$t_{d(off)}$		-	65	-	
Fall Time		t_f		-	17	-	
Body Diode Reverse Recovery Time		t_{rr}	$I_F = -20A, dI/dt = 100A/\mu s$	-	42	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	29	-	nC
Drain- Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V_{SD}	$I_S = -20A, V_{GS} = 0V$	-	-	-1.2	V
Continuous Source Current	$T_C = 25^{\circ}C$	I_S	-	-	-	-60	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.
2. The EAS data shows Max. rating . The test condition is $V_{DD} = -30V, V_{GS} = -10V, L = 0.1mH, I_{AS} = -45A$.
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical and Thermal Characteristics

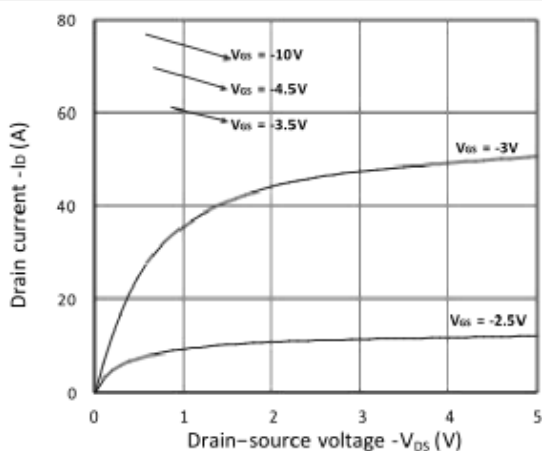


Figure 1. Output Characteristics

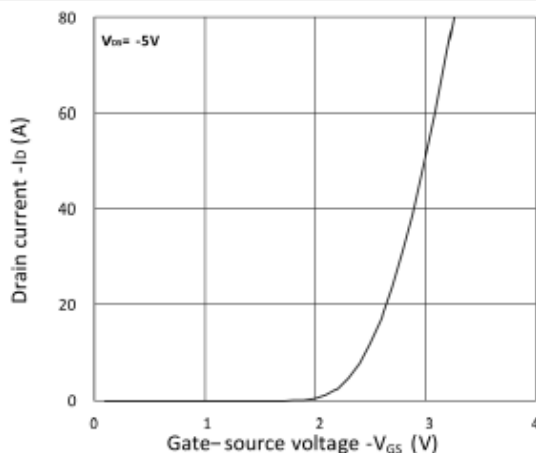


Figure 2. Transfer Characteristics

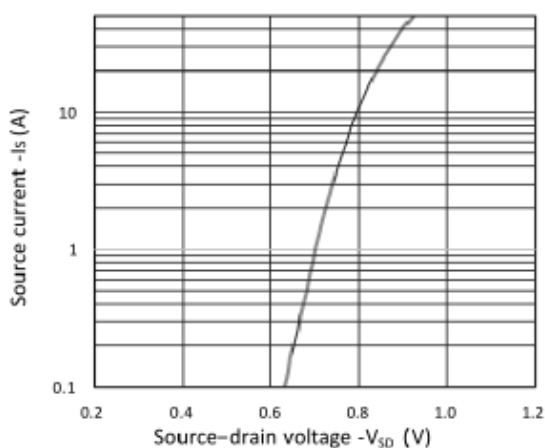


Figure 3. Forward Characteristics of Reverse

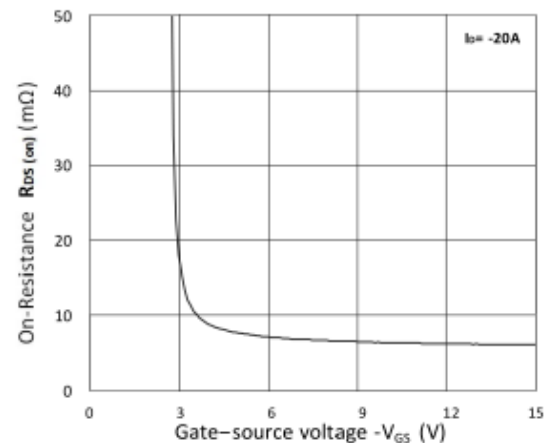


Figure 4. $R_{DS(on)}$ vs. V_{GS}

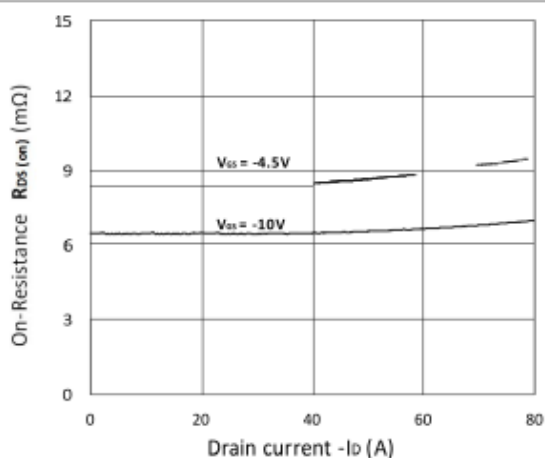


Figure 5. $R_{DS(on)}$ vs. I_D

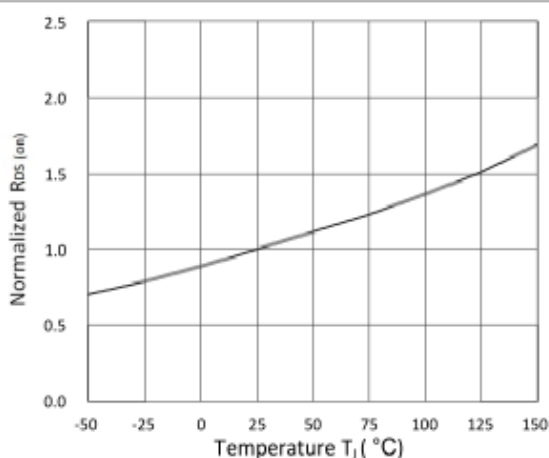


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

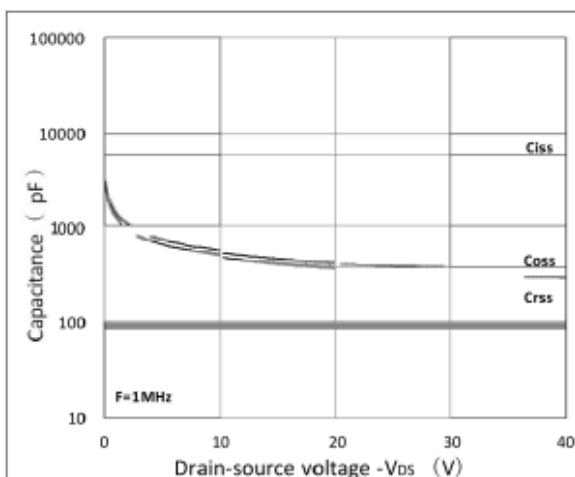


Figure 7. Capacitance Characteristics

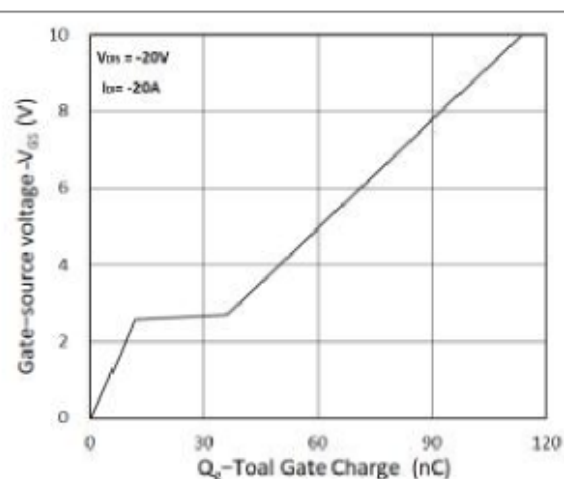


Figure 8. Gate Charge Characteristics

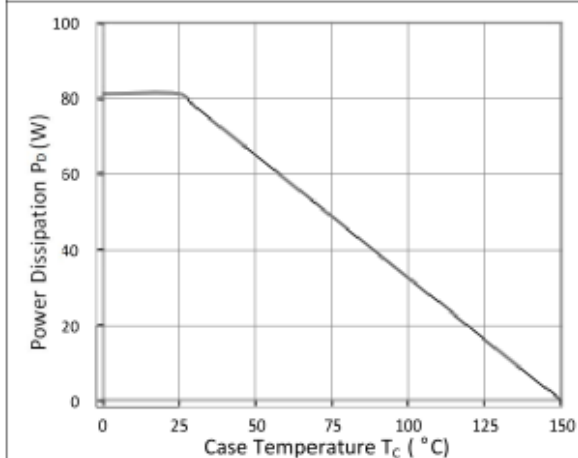


Figure 9. Power Dissipation

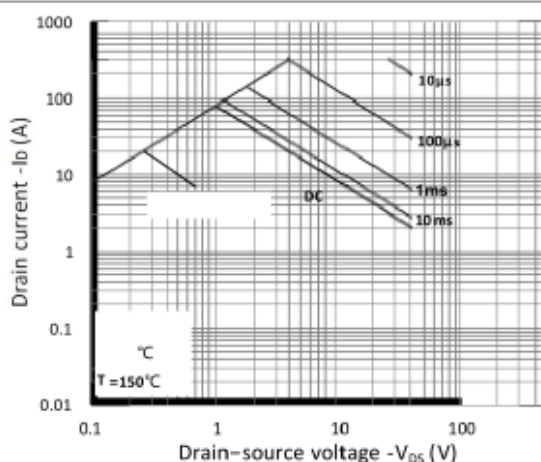


Figure10. Safe Operating Area

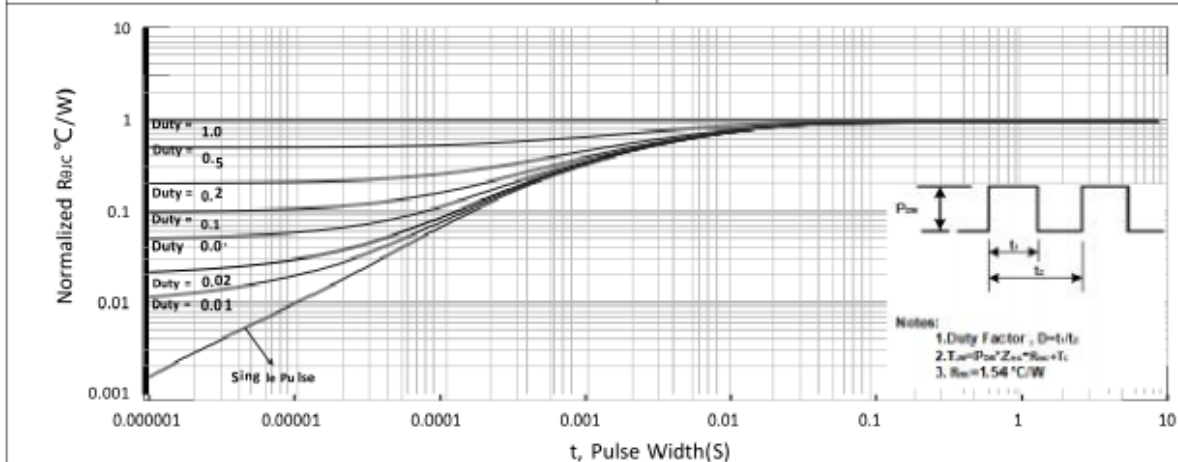
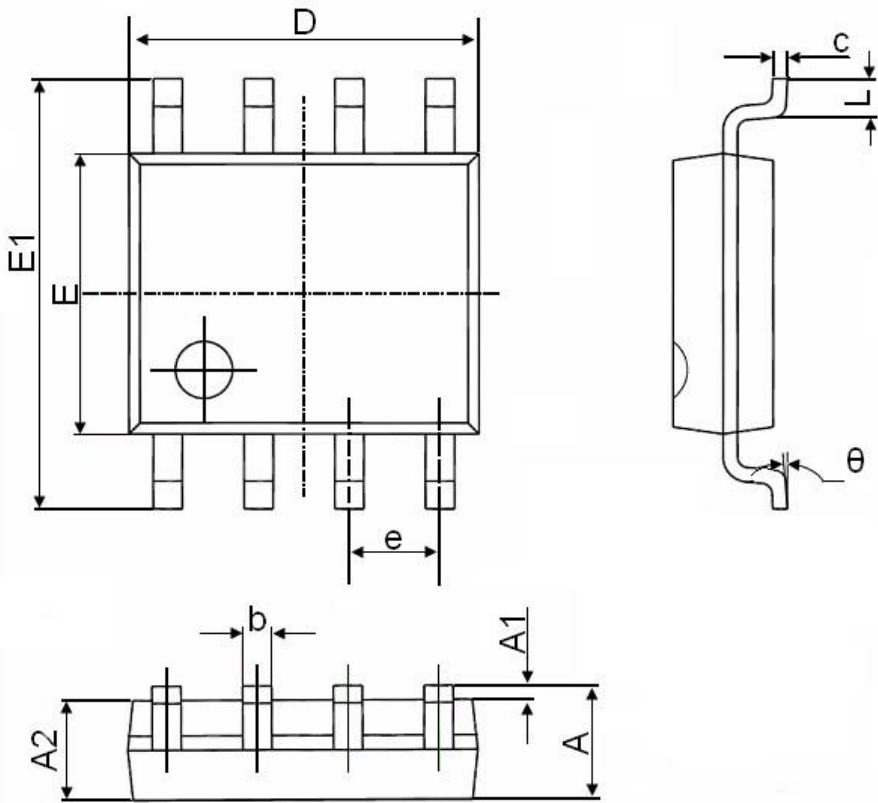


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050