General Description

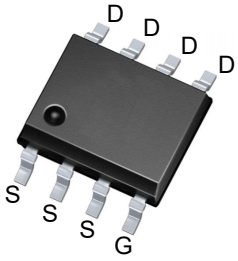
The MYP013BC uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

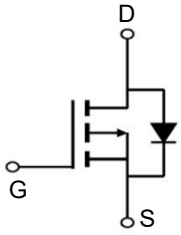
Features

V_{DSS}	-18	V
I_D	-13	A
$R_{DS(ON)}$(atV_{GS}=-4.5V)	10	mΩ
$R_{DS(ON)}$(atV_{GS}=-2.5V)	11	mΩ

Application

- Battery protection
- Load switch
- Uninterruptible power supply





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MYP013BC	SOP-8	null	3000

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

Parameter		Symbol	Limit		Unit
Drain-Source Voltage		V_{DS}	–18		V
Gate-Source Voltage		V_{GS}	±8		
Continuous Drain Current (T_J = 150°C)[a, b]	T_A = 25°C	I_D	–13		A
	T_A = 70°C		–11		
Pulsed Drain Current		I_{DM}	–40		
Continuous Source Current (Diode Conduction)[a, b]		I_S	–2.1		
Maximum Power Dissipation[a, b]	T_A = 25°C	P_D	2.5		W
	T_A = 70°C		1.6		
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150		°C
Maximum Junction-to-Ambient[a]	t ≤ 10 sec	R_{thJA}		50	°C/W
	Steady State		80		

Notes
a. Surface Mounted on FR4 Board.
b. t ≤10 sec.

Electrical Characteristics (T_J=25 ˚C, unless otherwise noted)

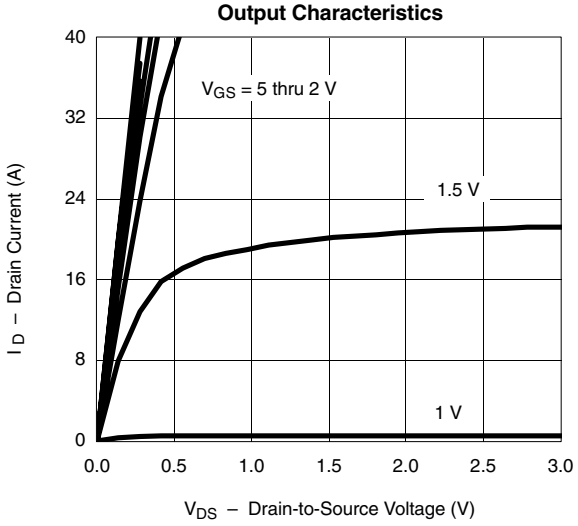
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250$ μA	–0.45		–1.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0$ V, $V_{GS} = \pm 8$ V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -8$ V, $V_{GS} = 0$ V			–1	μA
		$V_{DS} = -8$ V, $V_{GS} = 0$ V, $T_J = 55°C$			–5	
On-State Drain Current[a]	$I_{D(on)}$	$V_{DS} \geq -5$ V, $V_{GS} = -4.5$ V	–20			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	$V_{GS} = -4.5$ V, $I_D = -13$ A		0.010	0.012	Ω
		$V_{GS} = -2.5$ V, $I_D = -12$ A		0.011	0.015	
		$V_{GS} = -1.8$ V, $I_D = -10$ A		0.018	0.020	
Forward Transconductance[a]	g_{fs}	$V_{DS} = -10$ V, $I_D = -14$ A		60		S
Diode Forward Voltage[a]	V_{SD}	$I_S = -2.1$ A, $V_{GS} = 0$ V		0.7	–1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	$V_{DS} = -4$ V, $V_{GS} = -4.5$ V, $I_D = -14$ A		80	120	nC
Gate-Source Charge	Q_{gs}			15		
Gate-Drain Charge	Q_{gd}			9		
Gate Resistance	R_G			3.3	5	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -4$ V, $R_L = 4$ 4 Ω $I_D \cong -1$ A, $V_{GEN} = -4.5$ V, $R_G = 6$ Ω		45	90	ns
Rise Time	t_r			55	110	
Turn-Off Delay Time	$t_{d(off)}$			380	760	
Fall Time	t_f			190	380	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -2.1$ A, di/dt = 100 A/μs		80	120	

Notes

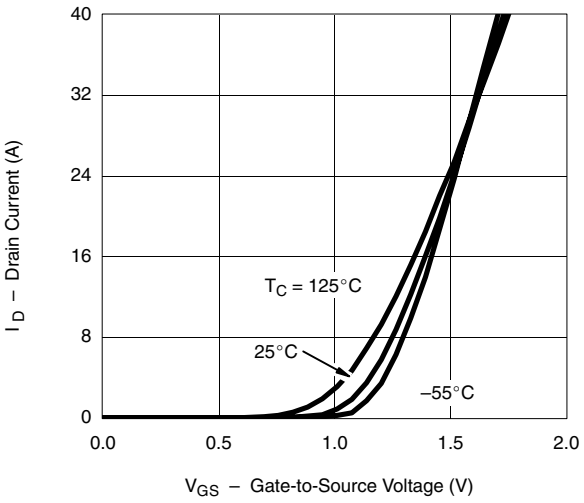
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

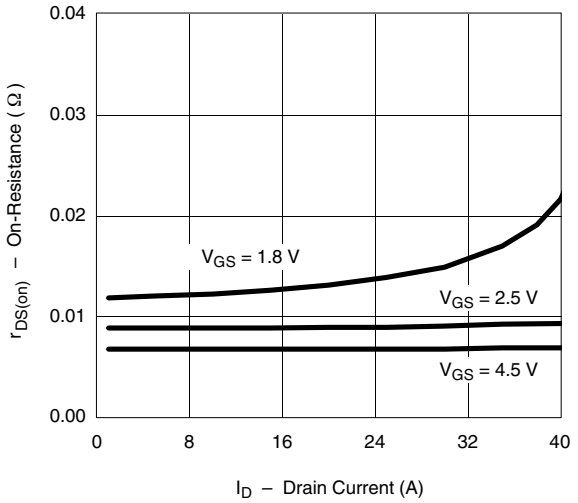
Output Characteristics



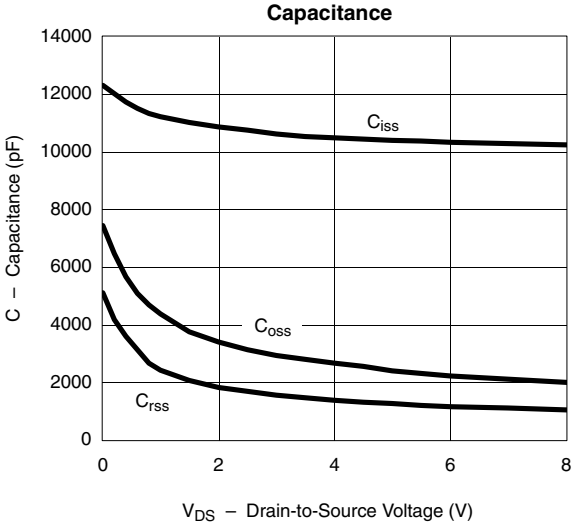
Transfer Characteristics



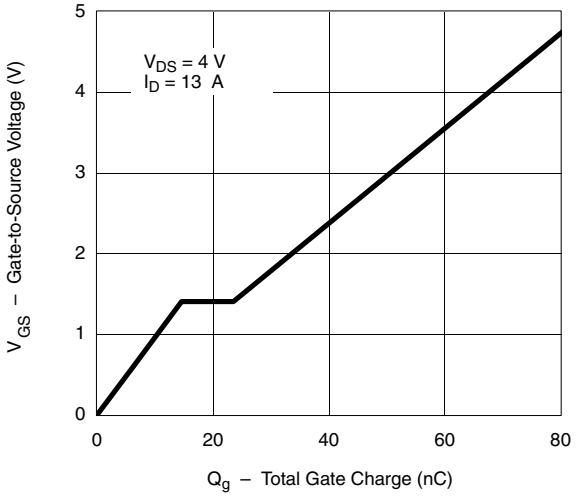
On-Resistance vs. Drain Current



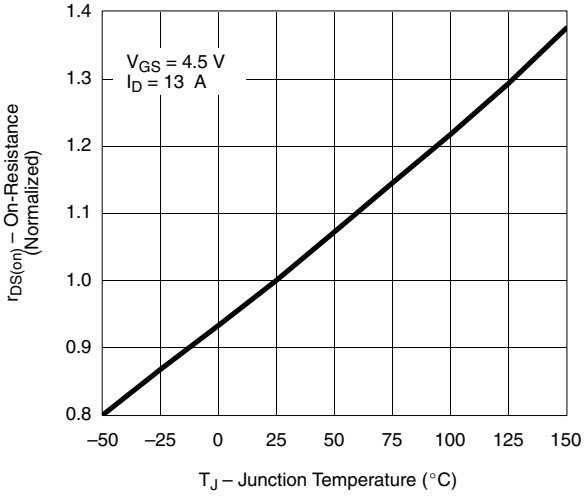
Capacitance



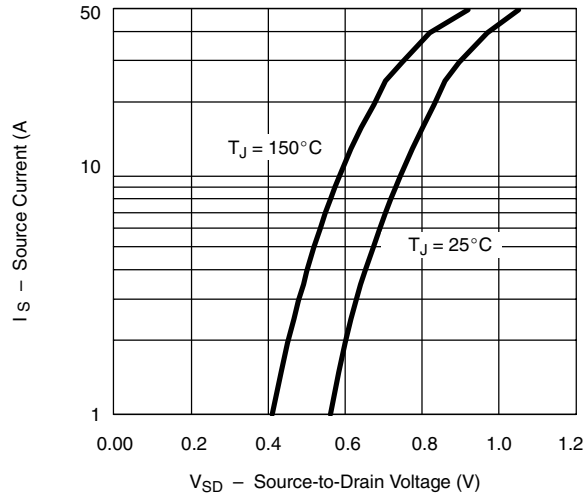
Gate Charge



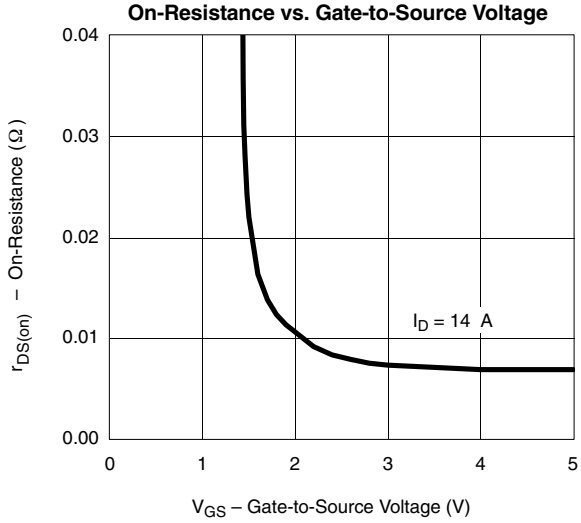
On-Resistance vs. Junction Temperature



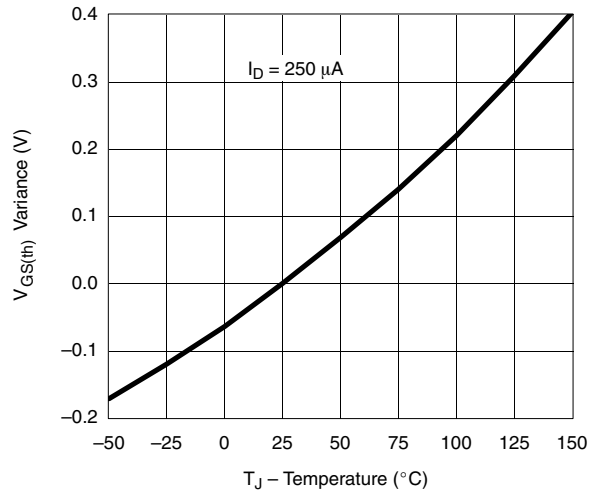
Source-Drain Diode Forward Voltage



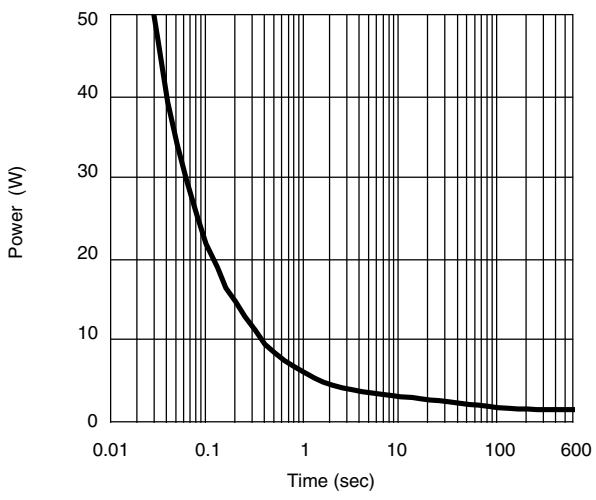
On-Resistance vs. Gate-to-Source Voltage



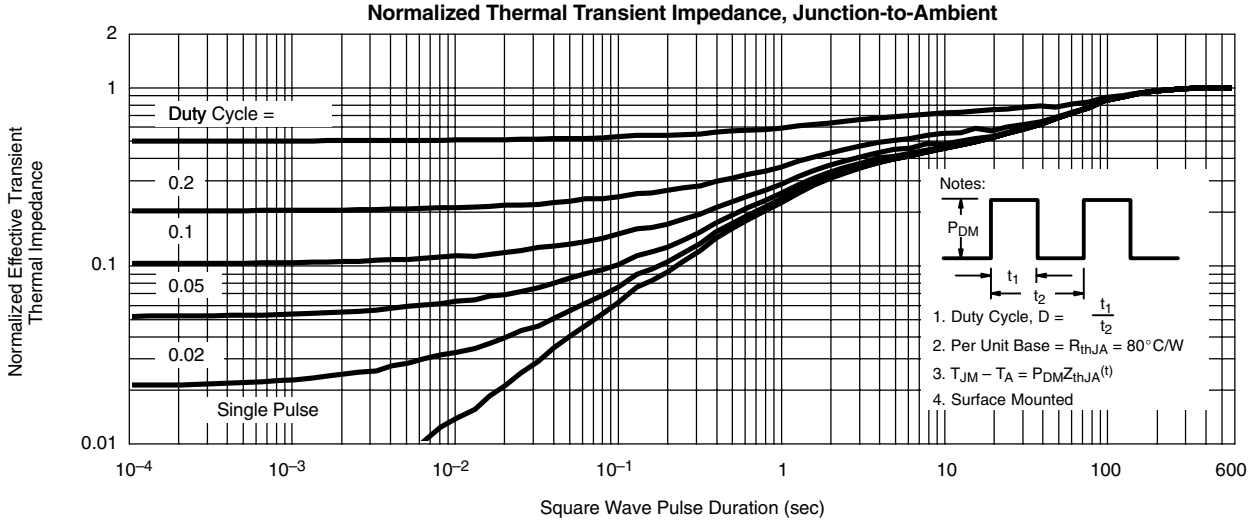
Threshold Voltage



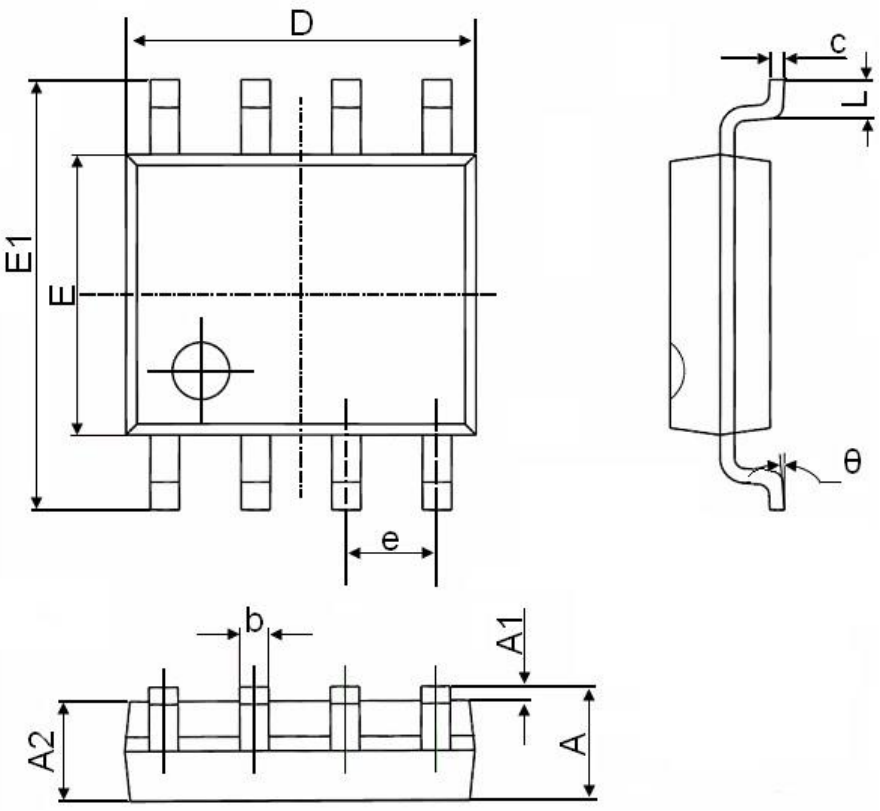
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



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