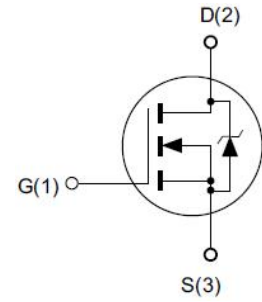
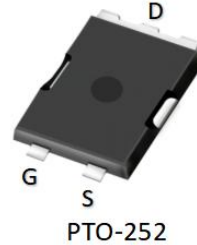


### Features

- ◆ 650V, 10A,  $R_{DS(ON)}(Typ.) = 0.80\Omega @ V_{GS} = 10V$ .
- ◆ Low  $C_{rss}$
- ◆ Fast Switching
- ◆ 100% Avalanche Tested

### Application

- ◆ Adapter
- ◆ LCD/PDP Adapter
- ◆ E-Bike Charger



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

Symbol	Parameter	Limit	Unit
		PTO-252	
$V_{DS}$	Drain-Source Voltage <sup>a</sup>	650	V
$V_{GS}$	Gate-Source Voltage	$\pm 30$	V
$I_D$	Drain Current-Continuous, $T_c = 25^\circ\text{C}$	10	A
	Drain Current-Continuous, $T_c = 100^\circ\text{C}$	5.5	A
$I_{DM}$	Drain Current-Pulsed <sup>b</sup>	40	A
$P_D$	Maximum Power Dissipation @ $T_J = 25^\circ\text{C}$	100	W
$E_{AS}$	Single Pulsed Avalanche Energy <sup>d</sup>	405	mJ
$T_J, T_{STG}$	Operating and Store Temperature Range	-55 to 150	$^\circ\text{C}$

### Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-Case Max.	1.25	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient Max.	62.5	$^\circ\text{C}/\text{W}$

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

#### Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu\text{A}$	650	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V$	-	-	1	$\mu\text{A}$
$I_{GSS}$	Forward Gate Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 30V$	-	-	$\pm 100$	nA



# MPP10N65

## N-Channel Power MOSFET

### ■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance <sup>c</sup>	$V_{GS} = 10V, I_D = 5A$	-	0.80	1.00	$\Omega$

### ■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$C_{iss}$	Input Capacitance	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	1595	-	pF
$C_{oss}$	Output Capacitance		-	134	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	6.6	-	pF

### ■ On Characteristics

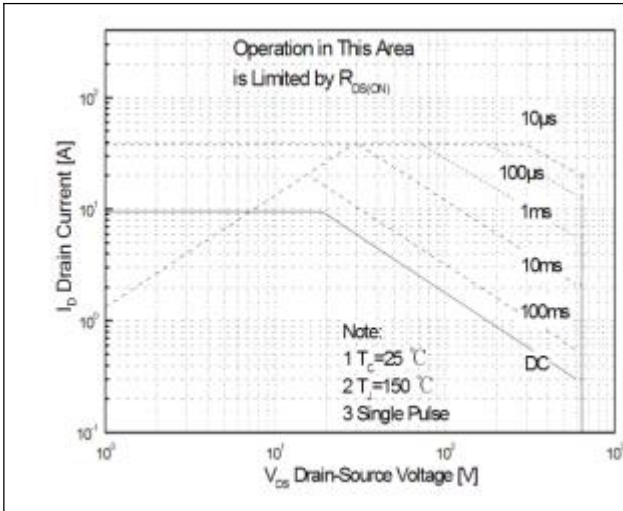
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 325V, I_D = 10A,$ $R_G = 25\Omega, V_{GS} = 10V$	-	25	-	ns
$t_r$	Turn-On Rise Time		-	21	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	50	-	ns
$t_f$	Turn-Off Fall Time		-	23	-	ns
$Q_g$	Total Gate Charge	$V_{DS} = 325V, I_D = 10A,$ $V_{GS} = 10V$	-	31.9	-	nC
$Q_{gs}$	Gate-Source Charge		-	8.1	-	nC
$Q_{gd}$	Gate-Drain Charge		-	11.9	-	nC

### ■ Drain-Source Diode Characteristics

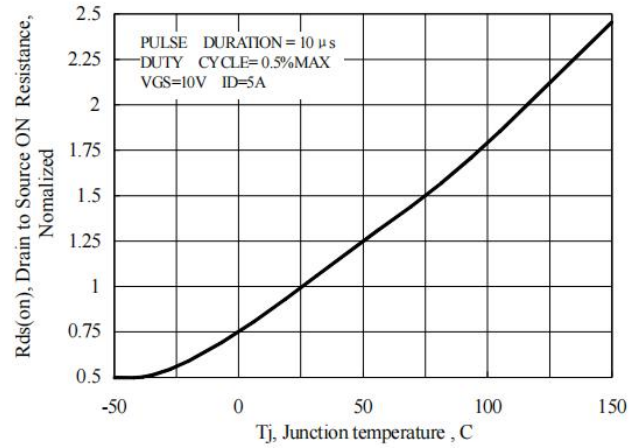
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$I_S$	Drain-Source Diode Forward Continuous Current	$V_{GS} = 0V$	-	-	10	A
$I_{SM}$	Maximum Pulsed Current	$V_{GS} = 0V$	-	-	40	A
$V_{SD}$	Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 10A$	-	-	1.4	V
$T_{rr}$	Body Diode Reverse Recovery Time	$di/dt = 100A/\mu s$ $I_S = 10A, V_{GS} = 0V$	-	498	-	ns
$Q_{rr}$	Reverse Recovery Charge		-	3039	-	nC

Notes:

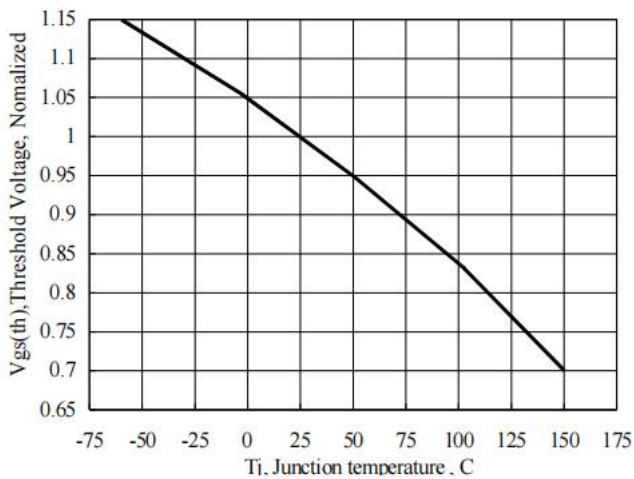
- $T_J = +25\text{ }^\circ\text{C}$  to  $+150\text{ }^\circ\text{C}$
- Repetitive rating; pulse width limited by maximum junction temperature.
- Pulse width  $\leq 300\mu s$ ; duty cycle  $\leq 2\%$
- $L = 10mH, V_{DD} = 50V, I_{as} = 9A, R_G = 25\Omega$  Starting  $T_J = 25\text{ }^\circ\text{C}$



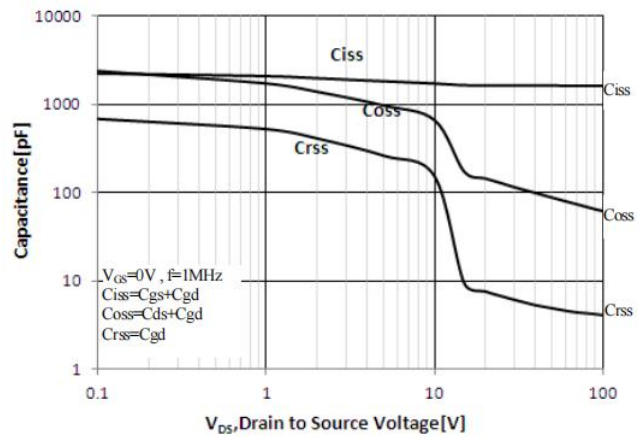
**Figure1. Maximum Safe Operating Area**



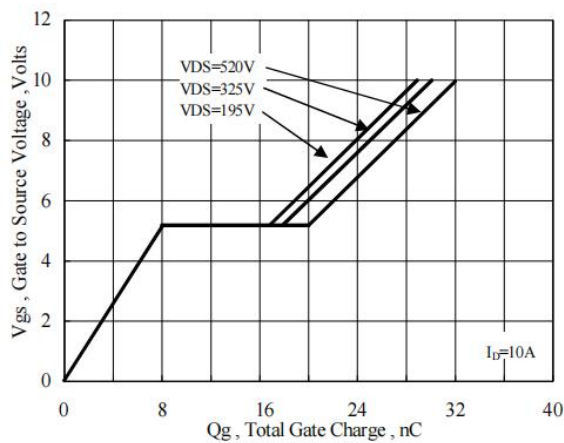
**Figure2. Normalized On-Resistance Variation with Temperature**



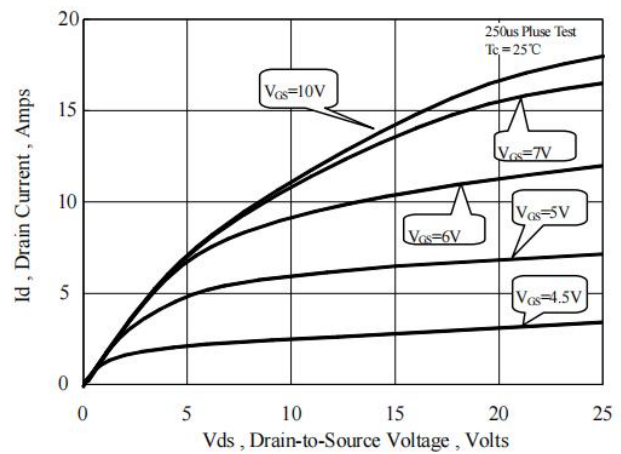
**Figure 3. Gate Threshold Variation with Temperature**



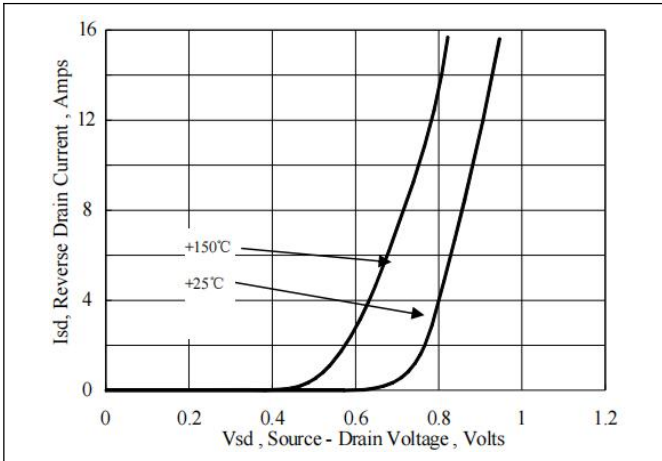
**Figure 4. Capacitance Characteristics**



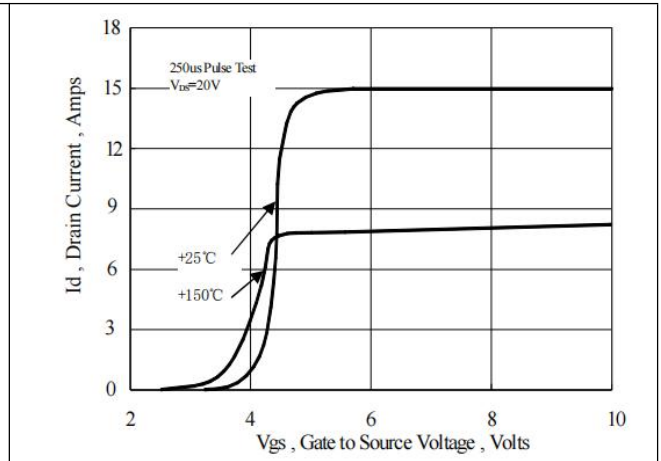
**Figure 5. Gate Charge Characteristics**



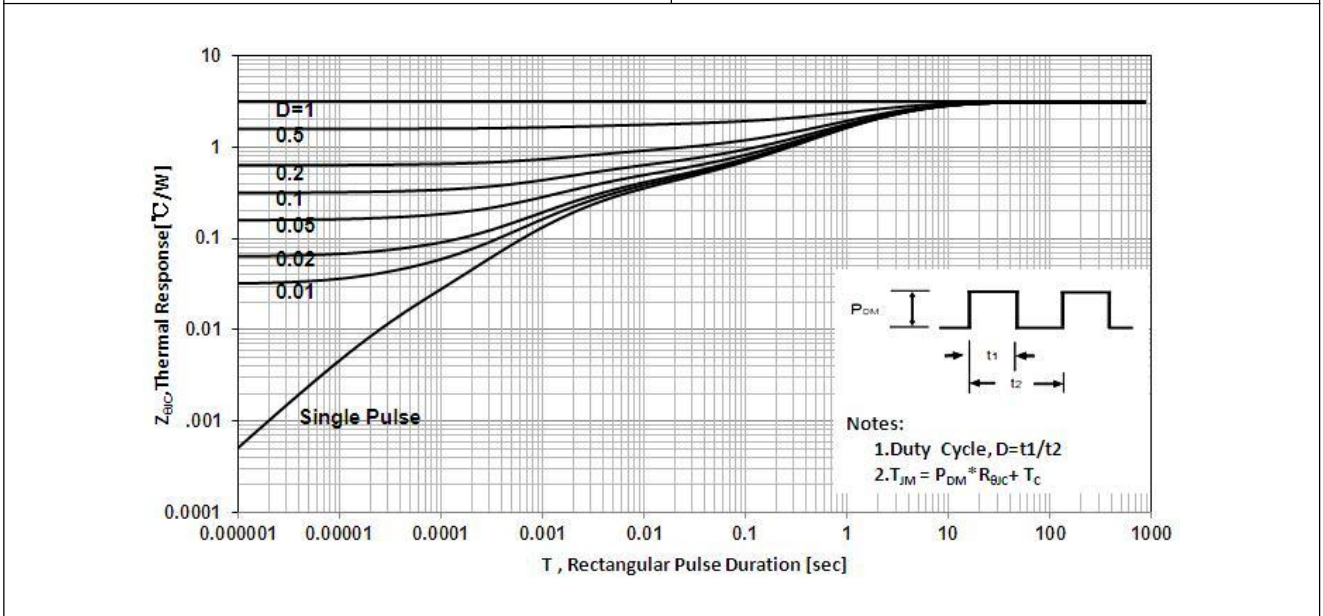
**Figure 6. On-State Characteristics**



**Figure 7. Body Diode Forward Voltage Variation with Source Current**

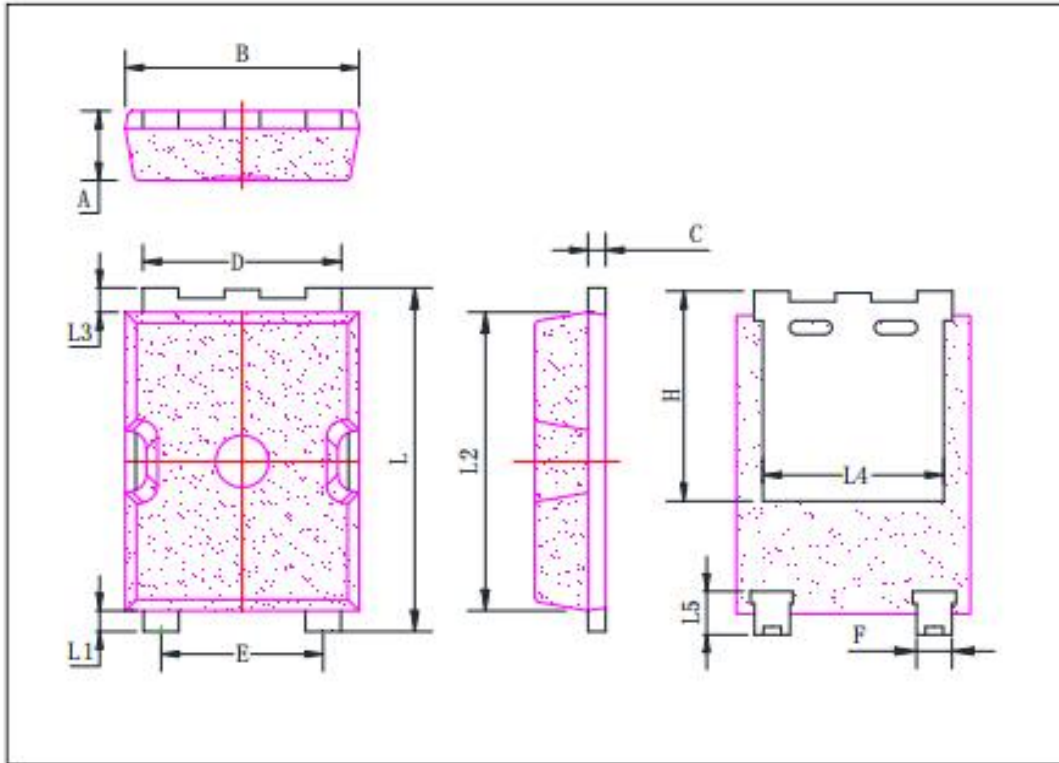


**Figure 8. Transfer Characteristics Variation with Source Current**



**Figure 9. Maximum Effective Thermal Impedance , Junction to Case**

### ■ Package Information



Symbol	Min	Typ	Max
A	1.90	2.00	2.10
B	6.50	6.60	6.70
C	0.45	0.50	0.60
D	5.50	5.60	5.70
E	4.50	4.60	4.70
F	0.90	1.00	1.05
H	5.90	6.05	6.20
L	9.80	9.90	10.0
L1	0.50	0.60	0.70
L2	8.50	8.60	8.70
L3	0.60	0.70	0.80
L4	4.65	4.80	4.90
L5	1.10	1.25	1.40