



MT1P10S P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design

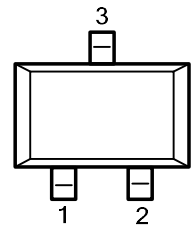
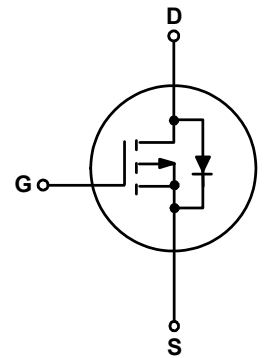
1.2 Applications

- ☑ Portable appliances
- ☑ High speed switch
- ☑ Battery management
- ☑ Low power DC to DC Converter

1.3 Quick reference

- ☑ $BV \leq -100\text{ V}$
- ☑ $P_{\text{tot}} \leq 0.83\text{ W}$
- ☑ $I_D \leq -1.1\text{ A}$
- ☑ $R_{\text{DS(ON)}} \leq 600\text{ m}\Omega @ V_{\text{GS}} = -10\text{ V}$
 $R_{\text{DS(ON)}} \leq 650\text{ m}\Omega @ V_{\text{GS}} = -4.5\text{ V}$

Marking : 1P10



Top View
SOT23

2. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	- 100	-	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	± 20	V
I_D^*	Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{\text{GS}} = -10\text{ V}$	-	- 1.1	A
		$T_A = 100\text{ }^\circ\text{C}, V_{\text{GS}} = -10\text{ V}$	-	- 0.73	A
$I_{\text{DM}}^{*,**}$	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{\text{GS}} = -10\text{ V}$	-	- 4.4	A
P_{tot}	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	0.83	W
T_{stg}	Storage Temperature		- 55	150	$^\circ\text{C}$
T_J	Junction Temperature		- 55	150	$^\circ\text{C}$
I_S	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	- 1.1	A
$R_{\theta\text{JA}}^*$	Thermal Resistance- Junction to Ambient		-	150	$^\circ\text{C} / \text{W}$

Notes :

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\text{ }\%$



3. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

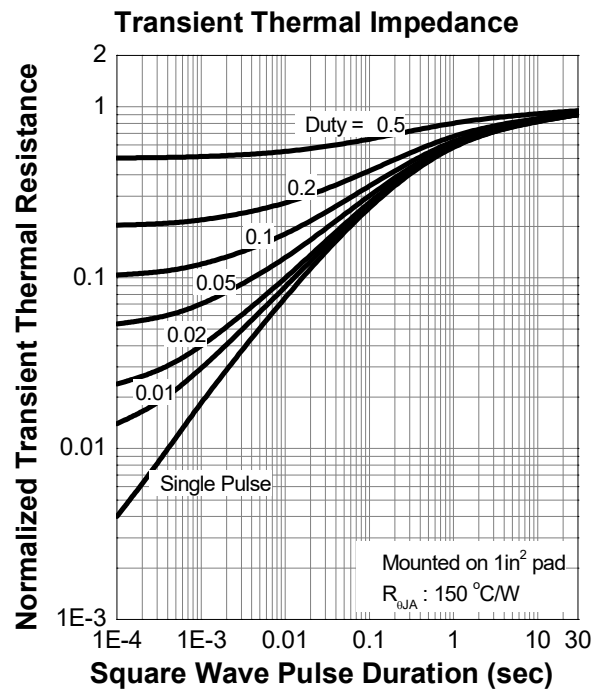
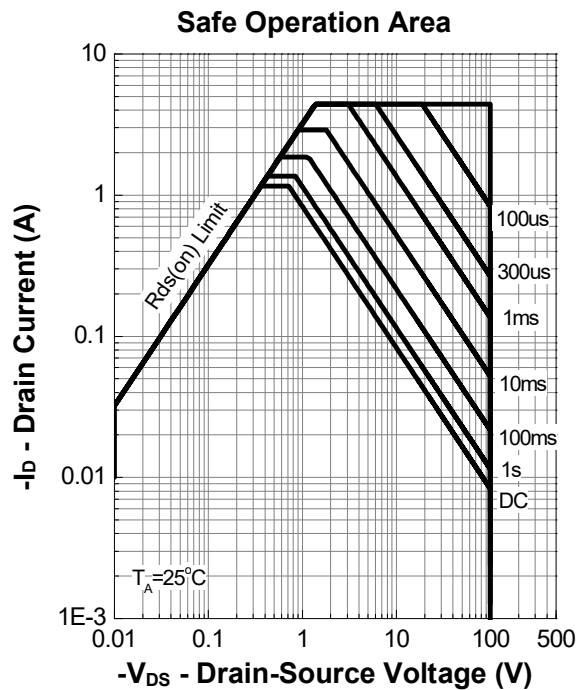
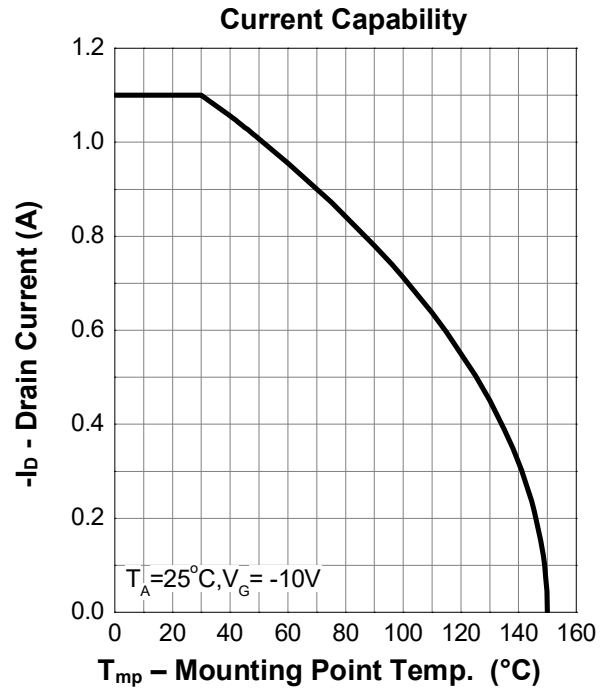
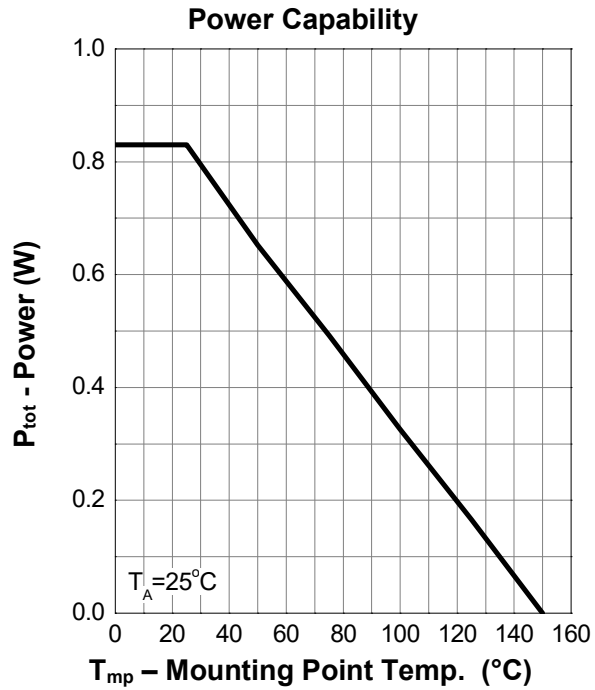
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = - 250 μA	- 100	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = - 250 μA	- 1	-	- 2.5	V
I _{DSS}	Drain Leakage Current	V _{DS} = - 80 V, V _{GS} = 0 V	-	-	- 1	μA
		T _J = 85 °C	-	-	- 30	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	-	-	± 100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = - 10 V, I _{DS} = - 1 A	-	500	600	m Ω
		V _{GS} = - 4.5 V, I _{DS} = - 0.5 A	-	600	650	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = - 1 A, V _{GS} = 0 V	-	-	- 1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} = - 1 A, dI _{SD} /dt = 100 A/μs	-	21	-	nS
Q _{rr}	Reverse Recovery Charge		-	17	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = -50 V Frequency = 1 MHz	-	363	-	pF
C _{oss}	Output Capacitance		-	16	-	
C _{rss}	Reverse Transfer Capacitance		-	1	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = - 50 V, V _{GEN} = - 10 V, R _G = 4.5 Ω, R _L = 50 Ω, I _{DS} = - 1 A	-	6.8	-	nS
t _r	Turn-on Rise Time		-	20	-	
t _{d(off)}	Turn-off Delay Time		-	145	-	
t _f	Turn-off Fall Time		-	48	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{GS} = - 10 V, V _{DS} = - 50 V, I _{DS} = - 1 A	-	18		nC
Q _{gs}	Gate-Source Charge		-	3.5		
Q _{gd}	Gate-Drain Charge		-	2.2		

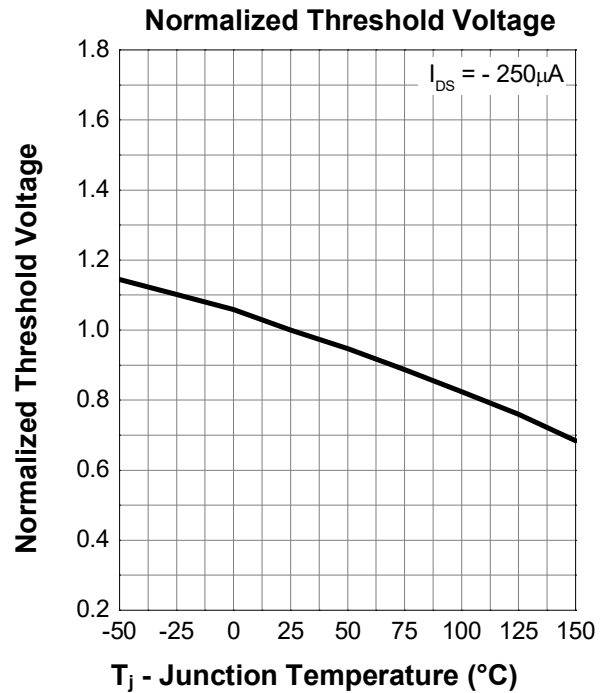
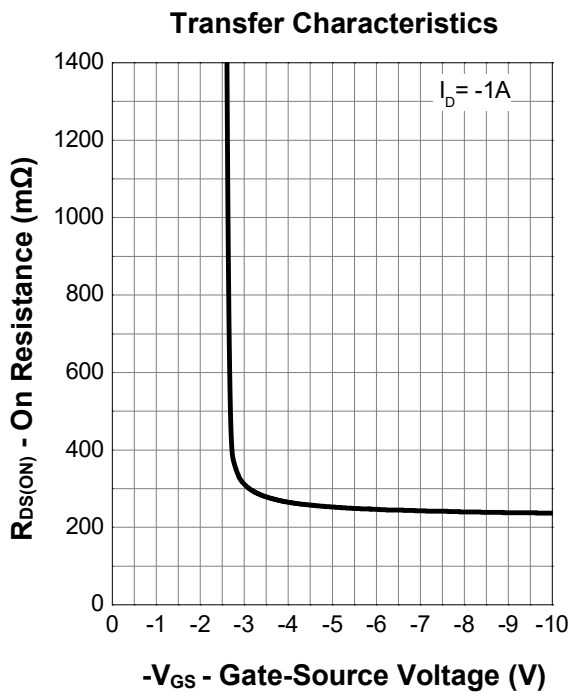
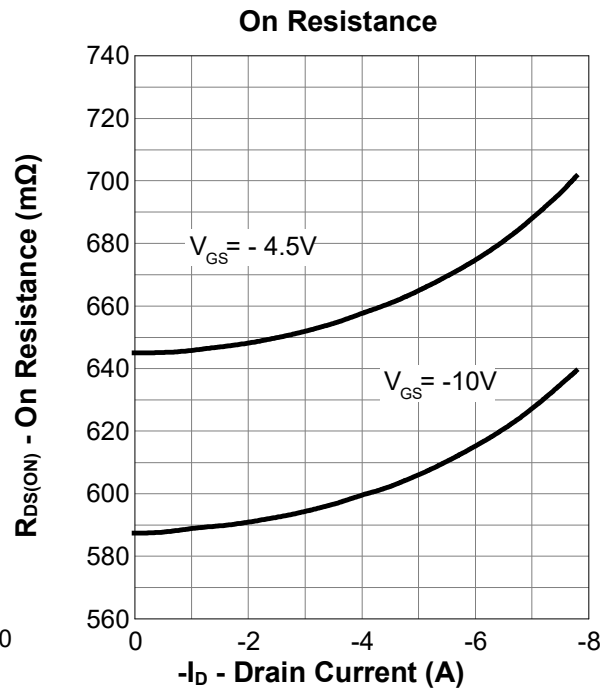
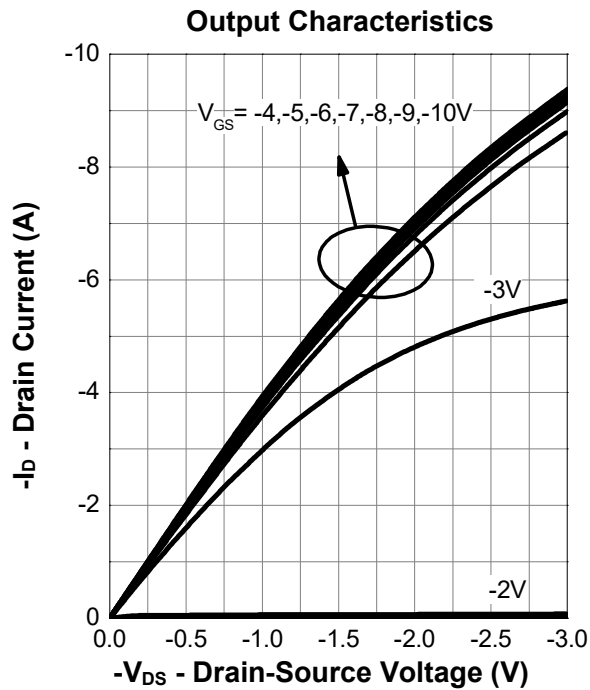
Notes : a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2 %

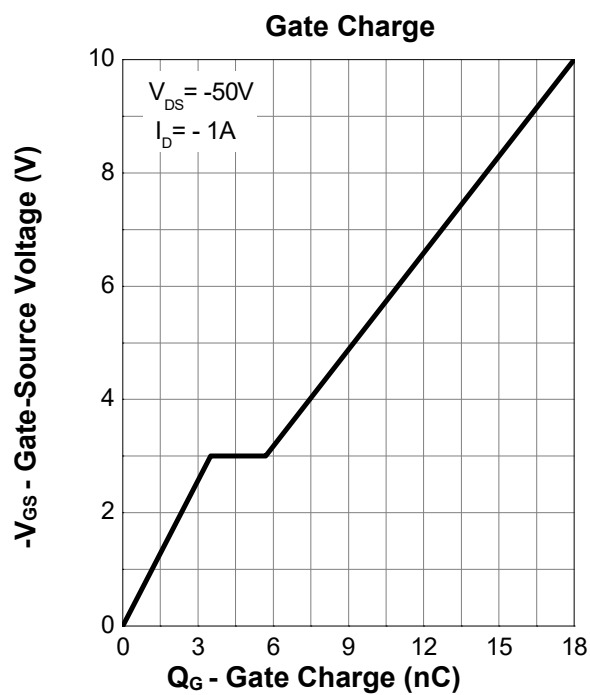
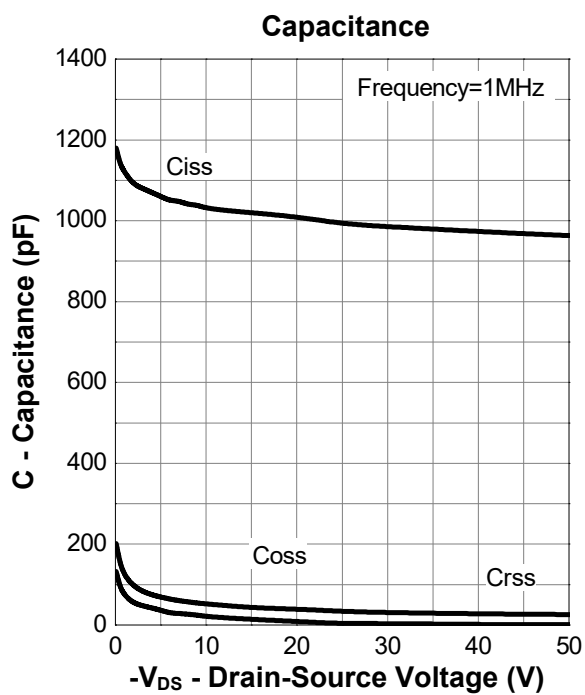
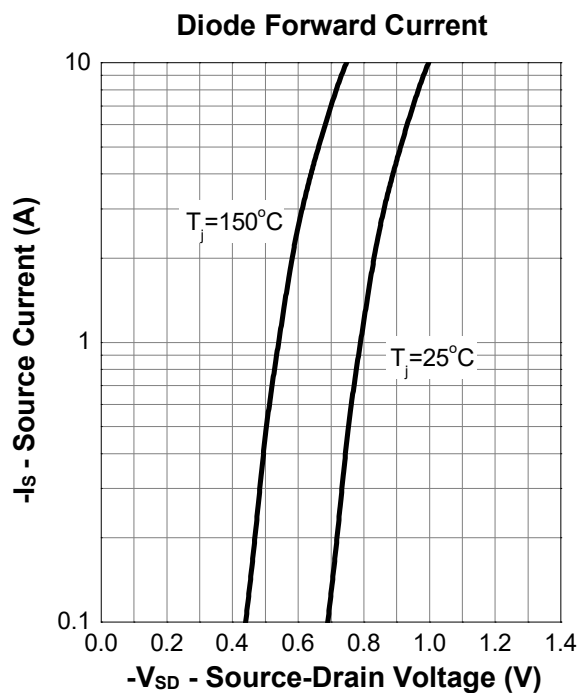
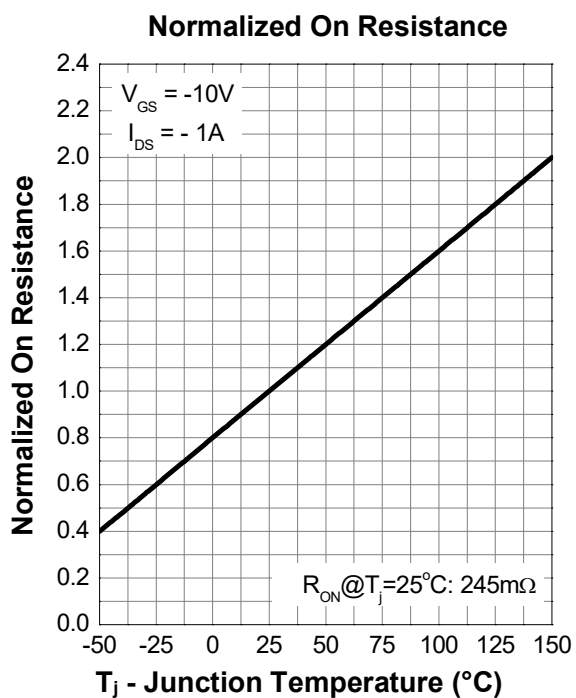
b : Guaranteed by design, not subject to production testing



. Typical Characteristics





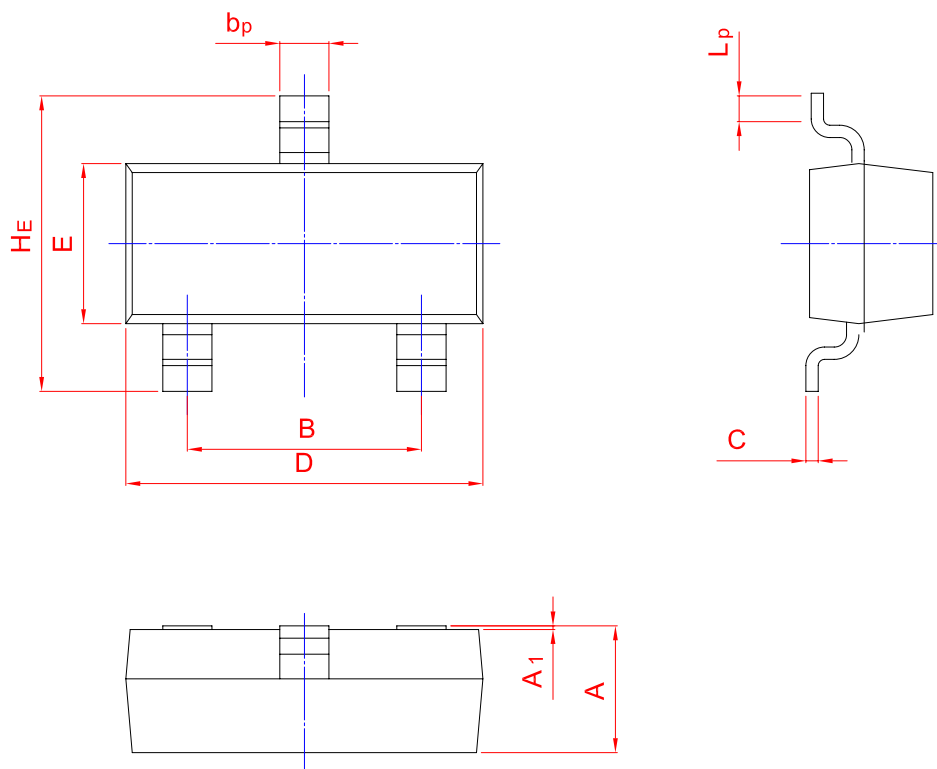
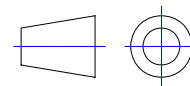




PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20