

◆ DESCRIPTION

The MT7407 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

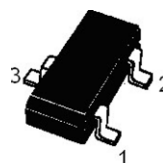
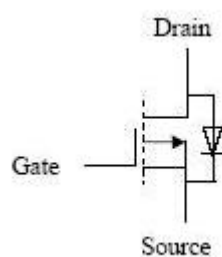
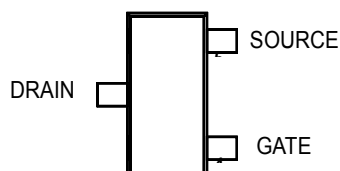
These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching, and low in-line power loss are needed in a very small outline surface mount package.

◆ FEATURES

- 20V/-3.4A, RDS(ON)= 100mΩ@VGS=-4.5V
- 20V/-2.4A, RDS(ON)= 125mΩ@VGS=-2.5V
- 20V/-1.7A, RDS(ON)= 150mΩ@VGS=-1.8V
- 20V/-1.0A, RDS(ON)= 220mΩ@VGS=-1.25V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-323 (SC-70-3L) package design

◆ APPLICATIONS

- Power Management in Note
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

◆ PIN CONFIGURATION


P- Channel Enhancement Mode MOSFET
◆ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

PARAMETER		SYMBOL	MAXIMUM	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_C=25^{\circ}\text{C}$	-2.3	A
		$T_C=70^{\circ}\text{C}$	-1.7	
Pulsed Drain Current		I_{DM}	-6	A
Continuous Source Current(Diode Conduction)		I_S	-1.4	A
Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$	1.19	W
		$T_C=70^{\circ}\text{C}$	0.76	
Operating junction temperature range		T_J	- 55 to 150	$^{\circ}\text{C}$
Storage temperature range		T_{STG}	- 55 to 150	$^{\circ}\text{C}$

◆ THERMAL RESISTANCE RATINGS

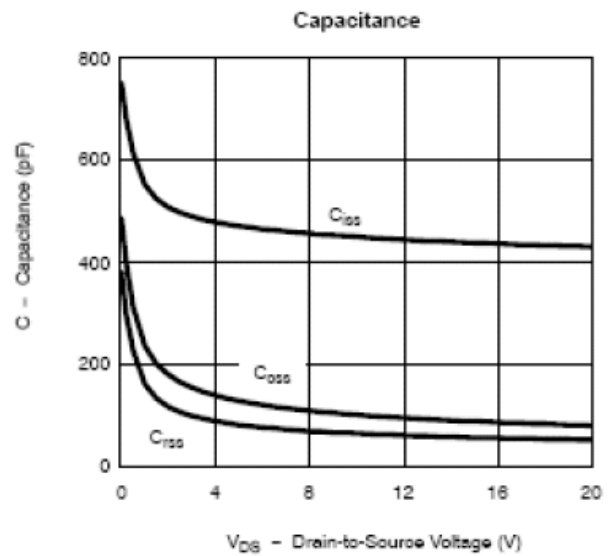
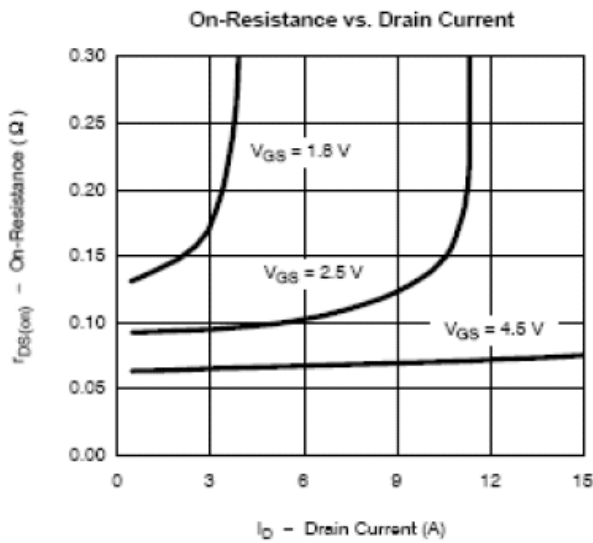
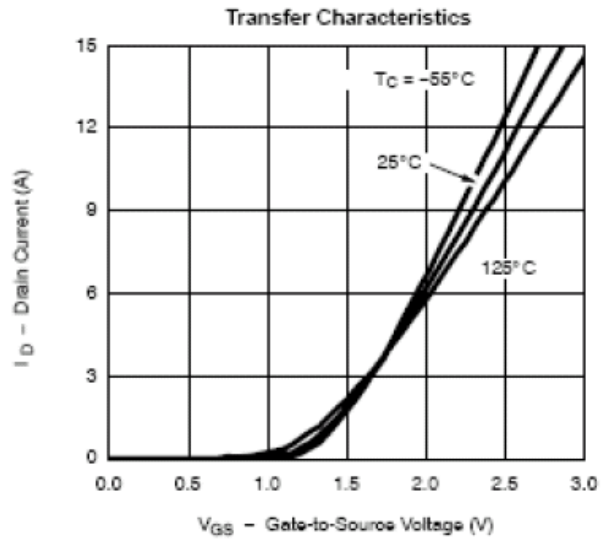
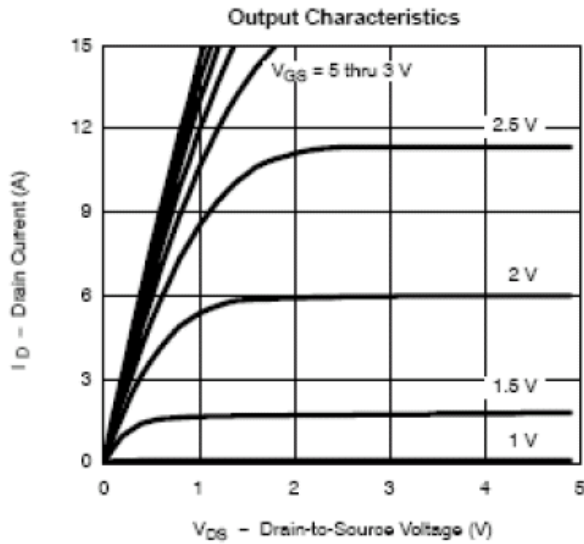
Thermal Resistance	Symbol	Maximum	UNIT
Junction-to-Ambient	$R_{\theta JA}$	105	$^{\circ}\text{C}/\text{W}$

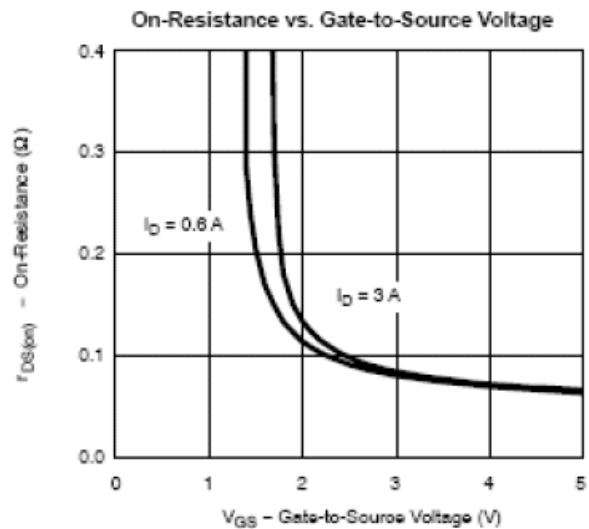
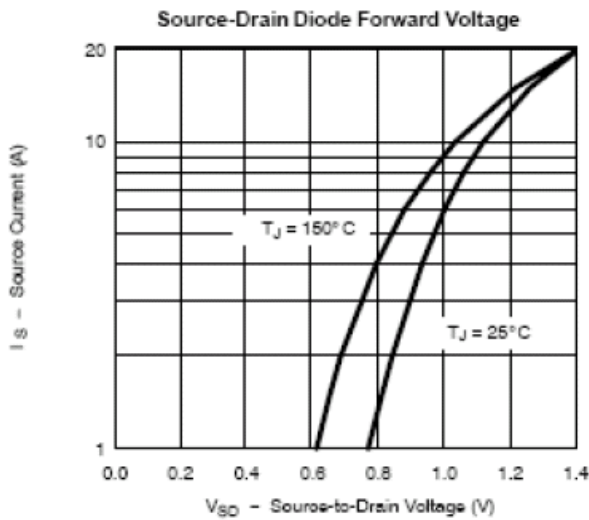
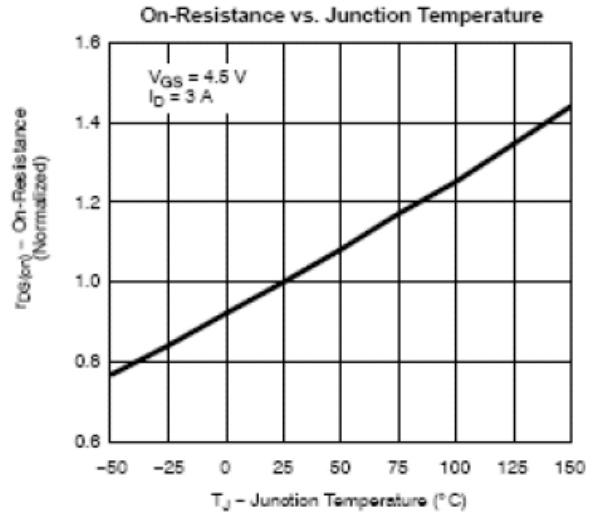
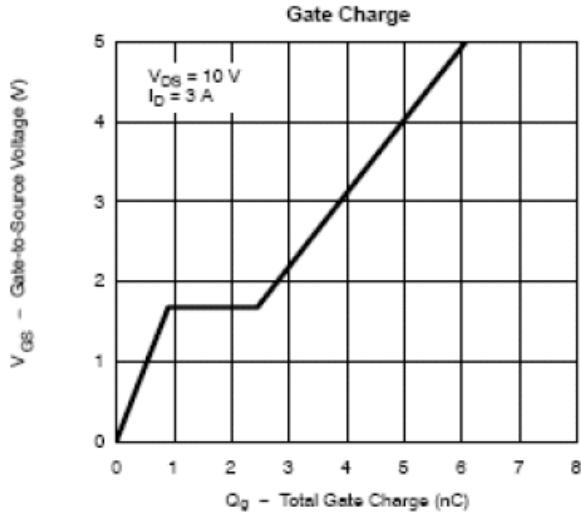
◆ ORDERING INFORMATION

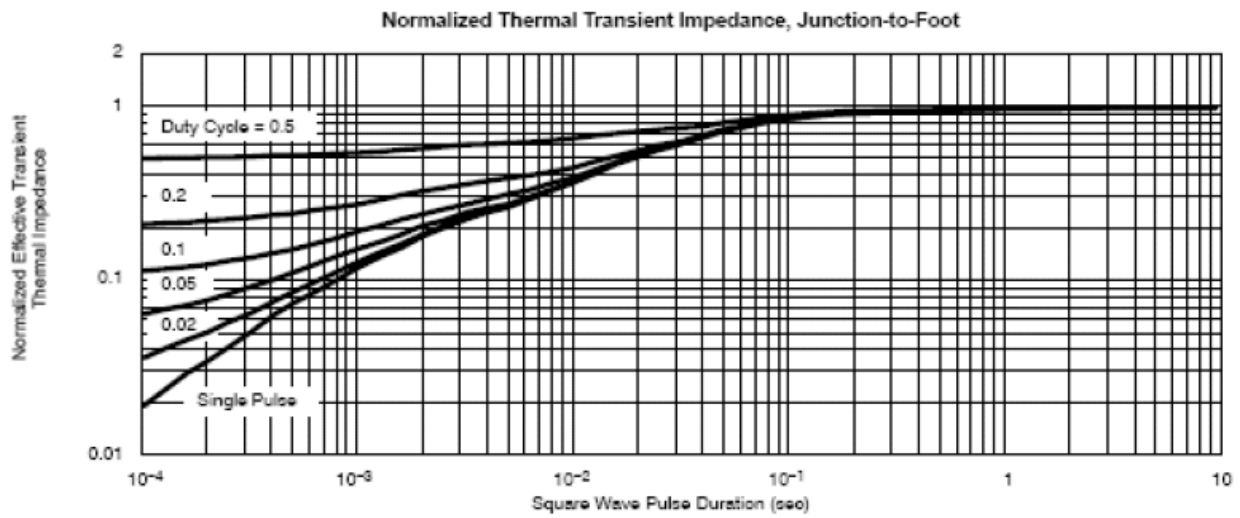
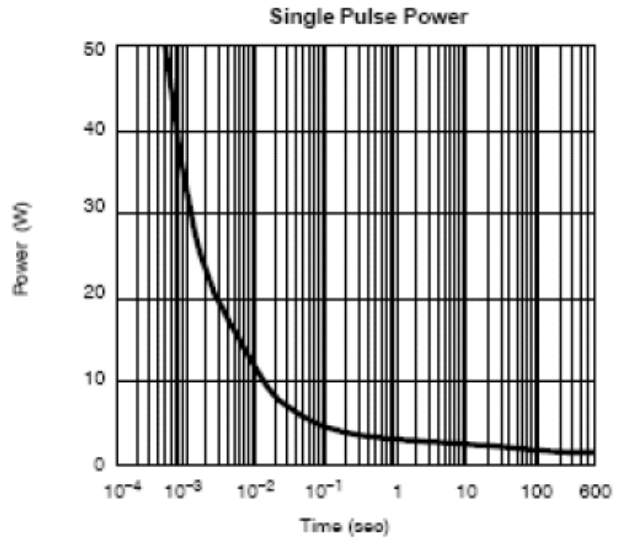
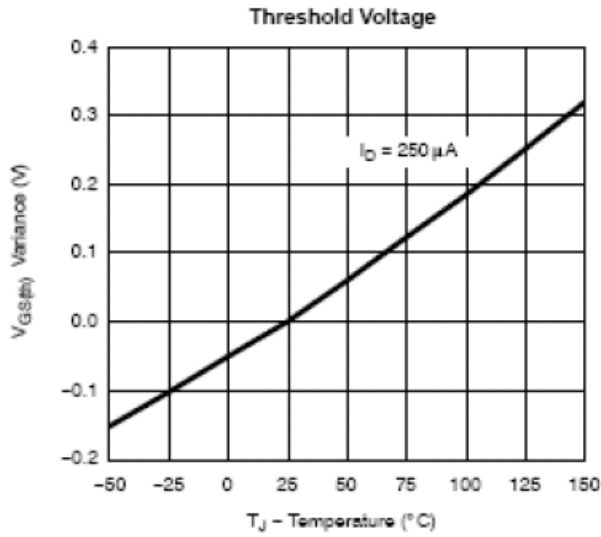
Device	Package	Shipping
MT7407	SOT-323	3000 PCS / Tape & Reel

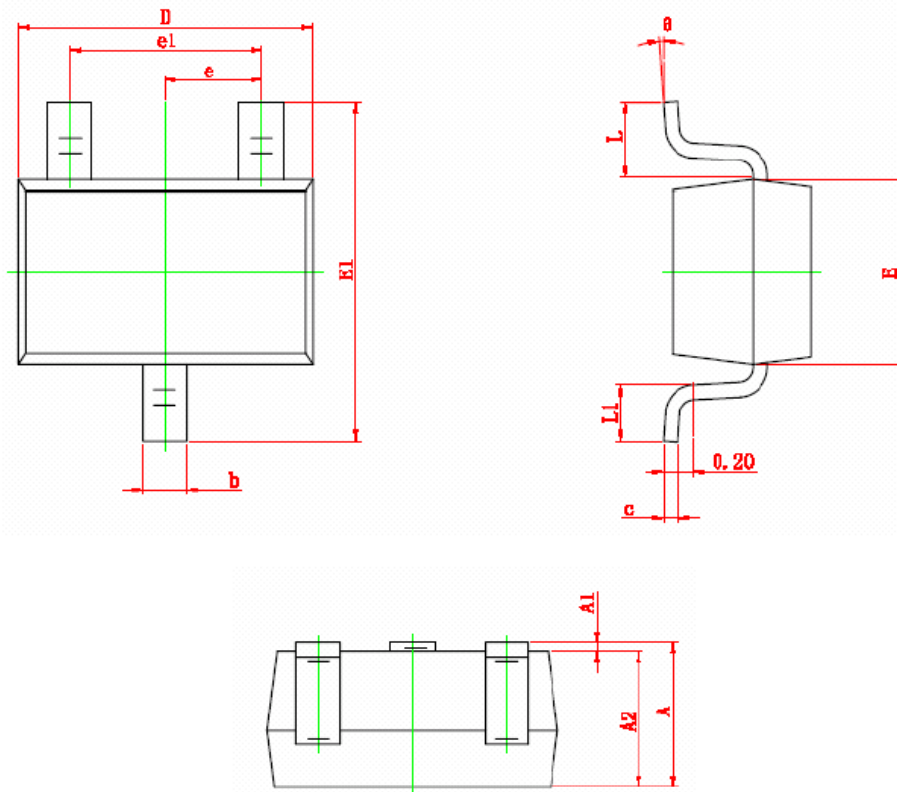
P- Channel Enhancement Mode MOSFET
◆ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.35		-0.8	V
Gate Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -20V, V_{GS} = 0V, T_J = 55^\circ\text{C}$			-5	
Forward Transconductance	g_{fs}	$V_{DS} = -5V, I_D = -2.8A$		6		S
On-State Drain Current	$I_{D(ON)}$	$V_{DS} \leq -5V, V_{GS} = -4.5V$	-6			A
Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = -4.5V, I_D = -3.4A$		0.080	0.100	Ω
		$V_{GS} = -2.5V, I_D = -2.4A$		0.105	0.125	
		$V_{GS} = -1.8V, I_D = -1.7A$		0.130	0.150	
		$V_{GS} = -1.25V, I_D = -1.0A$		0.180	0.22	
Diode Forward Voltage	V_{SD}	$I_S = -15A, V_{GS} = 0V$		-0.8	-1.2	V
Dynamic Parameters						
Input Cap.	C_{iss}	$V_{DS} = -6V, V_{GS} = 0V, f = 1\text{MHz}$		485		μF
Output Cap.	C_{oss}			85		
Reverse Transfer Cap.	C_{rss}			40		
Total Gate Charge	Q_g	$V_{DS} = -6V, V_{GS} = -4.5V, I_D = -2.8A$		4.8	8	nC
Gate-Source Charge	Q_{gs}			1.0		
Gate-Drain Charge	Q_{gd}			1.0		
Turn-On Time	$t_{d(on)}$	$V_{DD} = -6V, R_L = 6\Omega, I_D = -1.0A, V_{GEN} = -4.5V, R_G = 6\Omega$		10	16	ns
	t_r			13	23	
Turn-Off Time	$T_{d(off)}$			18	25	
	t_f			15	20	

◆ TYPICAL CHARACTERISTICS


P- Channel Enhancement Mode MOSFET
◆ TYPICAL CHARACTERISTICS


◆ TYPICAL CHARACTERISTICS


◆ SOT-323 PACKAGE OUTLINE


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°