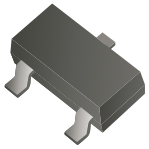
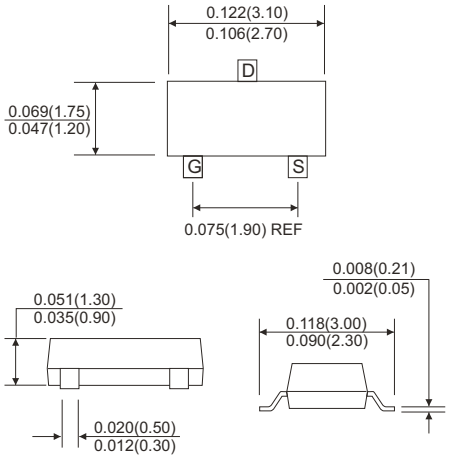
CMS3407T-HF

P-Channel
RoHS Device
Halogen Free



$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
-30V	50mΩ @ -10V	-4.1A
	75mΩ @ -4.5V	

SOT-23



Dimensions in inches and (millimeter)

Features

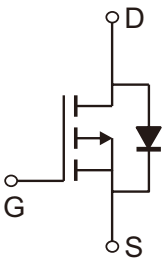
- Advanced high cell density trench technology.
- Low $R_{DS(ON)}$
- Low gate charge.
- Green device available.

Mechanical data

- Case: SOT-23, molded plastic.

Circuit Diagram

- G : Gate
- S : Source
- D : Drain



Description

The CMS3407T is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for use as a load switch or in PWM applications. The CMS3407T meet the RoHS and Green Product requirement with full function reliability approved.

Maximum Ratings (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source voltage	V_{DS}	-30	V
Gate-Source voltage	V_{GS}	±20	V
Continuous drain current [3]	I_D @ T_A=25°C	-4.1	A
	I_D @ T_A=70°C	-3.5	A
Pulsed drain current [1,2]	I_{DM} @ T_A=25°C	-12	A
Total power dissipation	P_D @ T_A=25°C	1.38	W
Linear derating factor	-	0.01	W/°C
Operating junction and storage temperature range	T_J, T_{STG}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Max. Value	Unit
Thermal resistance junction-ambient [3]	$R_{\theta JA}$	90	°C/W

Electrical Characteristics (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source breakdown voltage	BV_{DSS}	-30			V	V_{GS}=0, I_D=-250μA
Gate threshold voltage	$V_{GS(th)}$	-1.0		-3.0	V	V_{DS}=V_{GS}, I_D=-250μA
Forward transconductance	g_{fs}		8.2		S	V_{DS}=-5V, I_D=-4A
Gate-Source leakage current	I_{GSS}			±100	nA	V_{GS}= ±20V
Drain-Source leakage current (T_J=25°C)	I_{DSS}			-1	μA	V_{DS}=-24V, V_{GS}=0
Drain-Source leakage current (T_J=55°C)				-5		V_{DS}=-24V, V_{GS}=0
Static drain-source on-resistance [2]	$R_{DS(ON)}$			50	mΩ	V_{GS}=-10V, I_D=-4.1A
				75		V_{GS}=-4.5V, I_D=-3.0A
Total gate charge [2]	Q_g		15.2		nC	I_D=-3A V_{DS}=-24V V_{GS}=-10V
Gate-Source charge	Q_{gs}		5.5			
Gate-Drain (“Miller”) change	Q_{gd}		1			
Turn-on delay time [2]	$T_{d(on)}$		8.6		ns	V_{DS}=-15V I_D=-1A V_{GS}=-10V R_G=6Ω R_D=15Ω
Rise time	T_r		12.2			
Turn-off delay time	$T_{d(off)}$		36.6			
Fall time	T_f		20.8			
Input capacitance	Ciss		590		pF	V_{GS}=0V V_{DS}=-25V f=1.0MHz
Output capacitance	Coss		75			
Reverse transfer capacitance	Crss		10			

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Diode forward voltage [2]	V_{SD}			-1.2	V	I_S=-1.0A, V_{GS}=0V, T_J=25°C
Continuous source current	I_S			-4.1	A	V_G=V_D=0V, Force Current

Notes: 1. Pulse width limited by Max. junction temperature.
2. Pulse width≦300μs, duty cycle≦2%.
3. Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on min. copper pad.

Rating and Characteristic Curves

TYPICAL CHARACTERISTIC

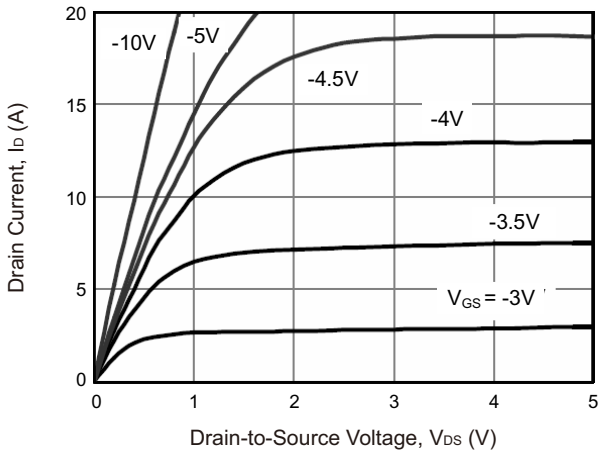


Fig.1 - Typical Output Characteristics

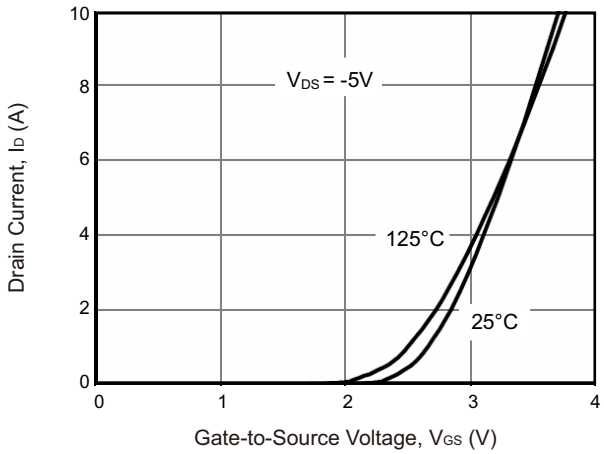


Fig.2 - Transfer Characteristics

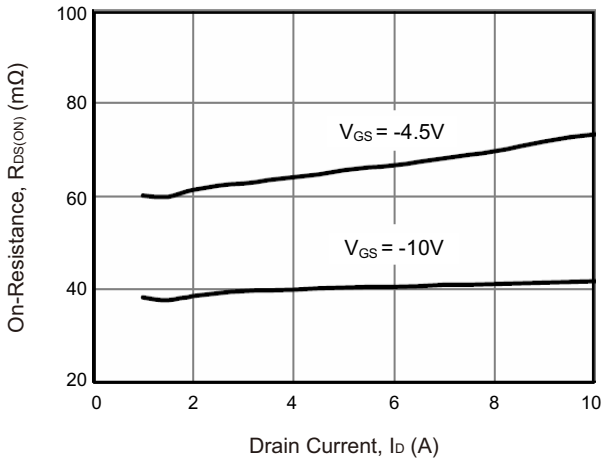


Fig.3 - On-Resistance vs. Drain Current

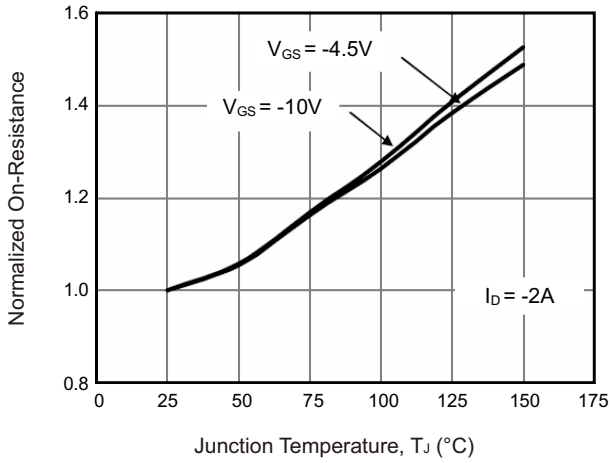


Fig.4 - Normalized RDSON vs. TJ

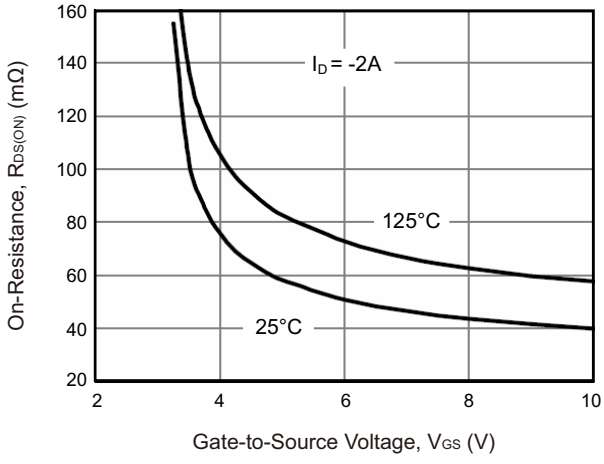


Fig.5 - On-Resistance vs. G-S Voltage

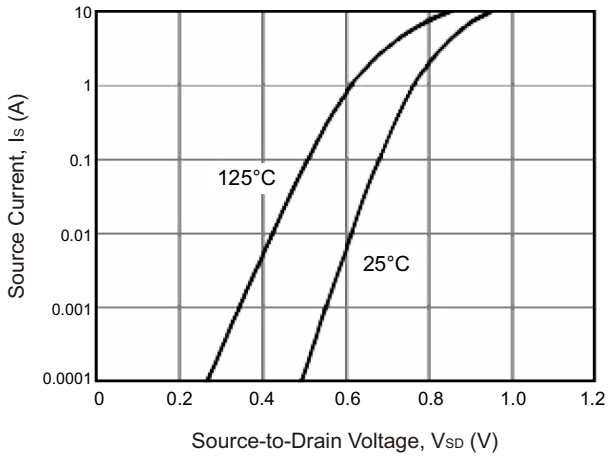


Fig.6 - Forward Characteristics of Reverse

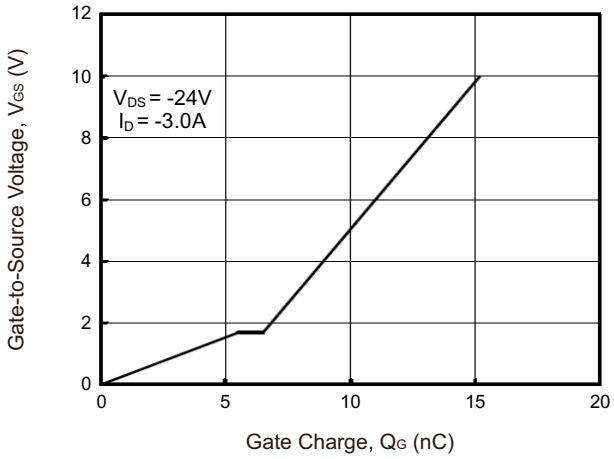


Fig.7 - Gate Charge Characteristics

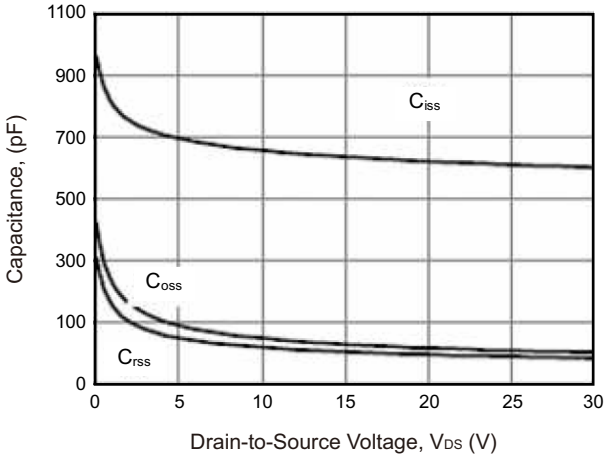


Fig.8 - Capacitance Characteristics

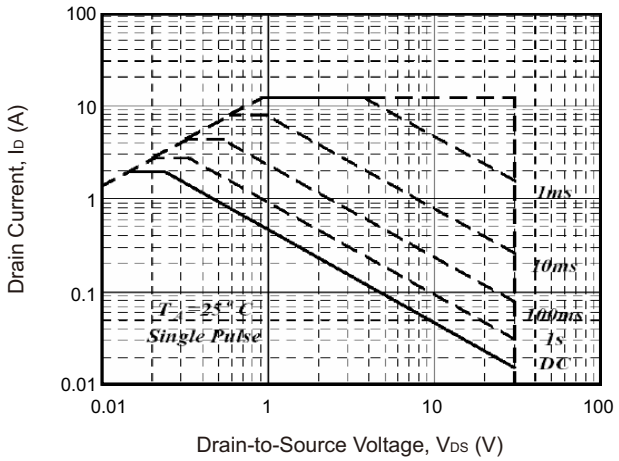


Fig.9 - Safe Operating Area

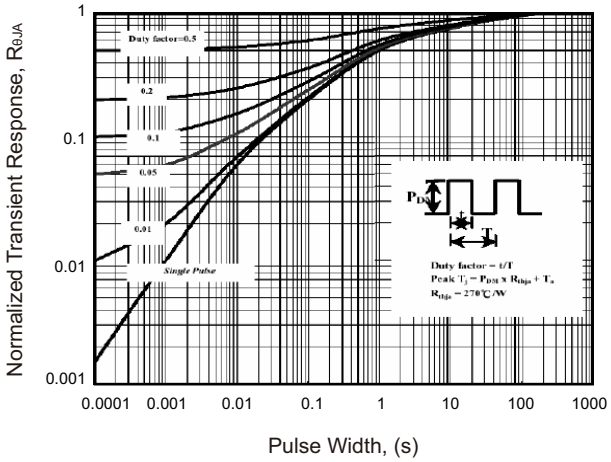


Fig.10 - Transient Thermal Impedance

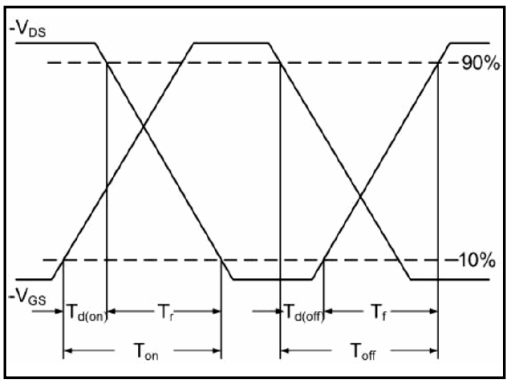


Fig.11 - Switching Time Waveform

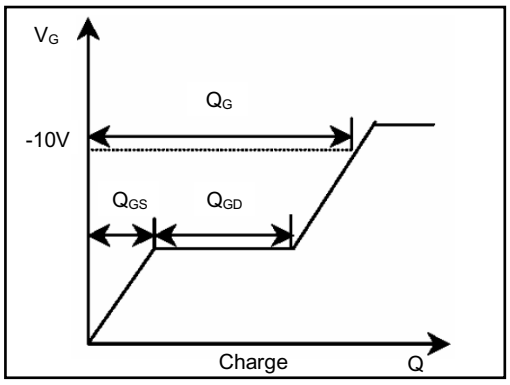
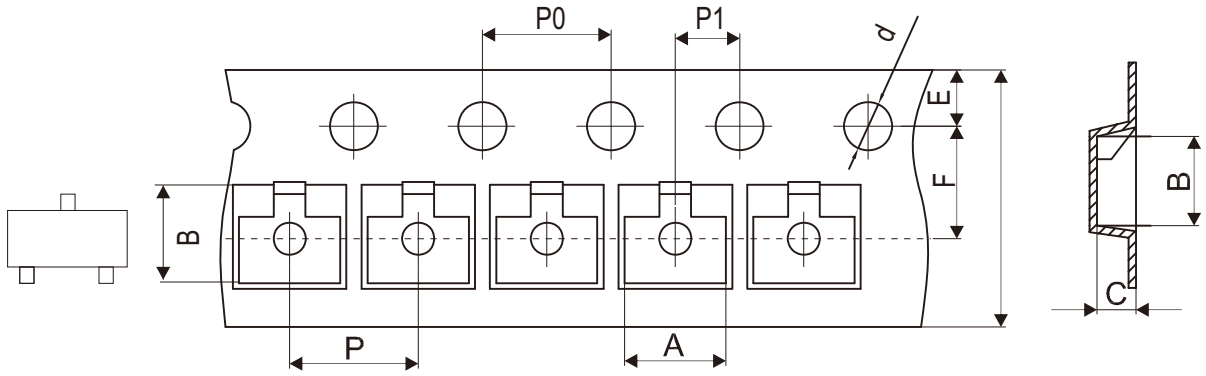
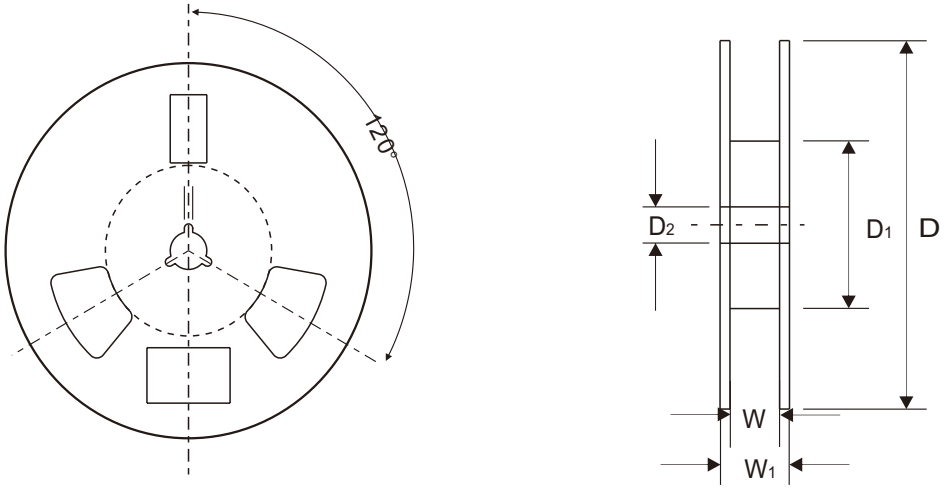
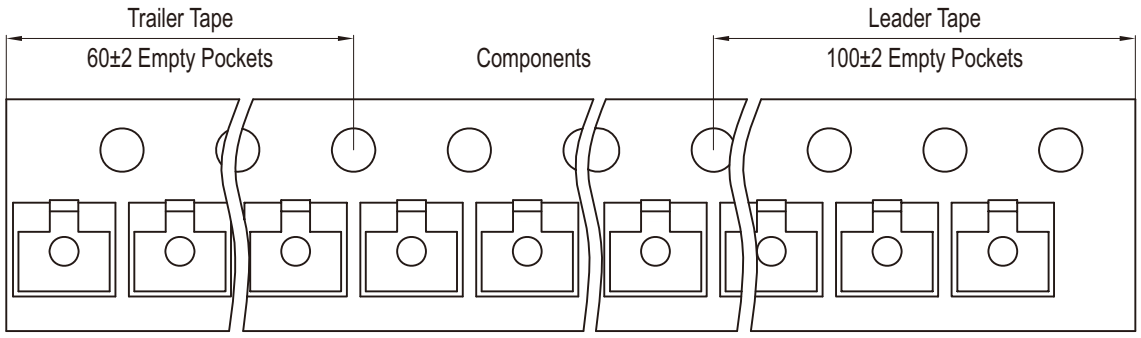


Fig.12 - Gate Charge Waveform

Reel Taping Specification





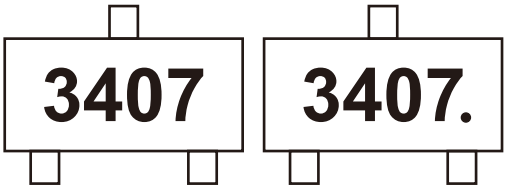


	SYMBOL	A	B	C	d	D	D_1	D_2
SOT-23	(mm)	3.10 ± 0.10	3.20 ± 0.10	1.37 ± 0.10	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.122 ± 0.004	0.126 ± 0.004	0.054 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P_0	P_1	W	W_1
SOT-23	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.40 + 1.50 / - 0.50	12.00 ± 1.50
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.330 + 0.012 / - 0.004	0.472 ± 0.039

Marking Code

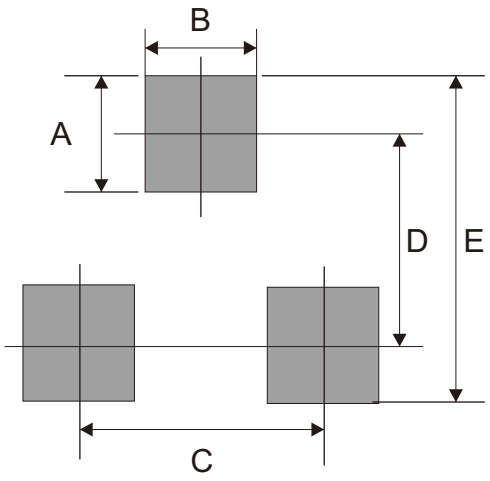
Part Number	Marking Code
CMS3407T-HF	3407



Solid dot = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.60	0.024
C	2.20	0.087
D	2.37	0.093
E	2.97	0.117



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7