

MS34P07

P-Channel 30-V (D-S) MOSFET

Description

The MS34P07 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 device meets the RoHS and Green Product requirement with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Green Device Available

Typical Applications

- Battery Protection
- Load Switch
- Hand-held Instrument

Package type : SOT-23

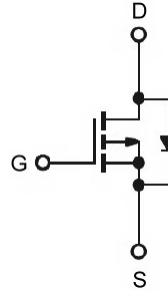
Packing & Order Information

3,000/Reel

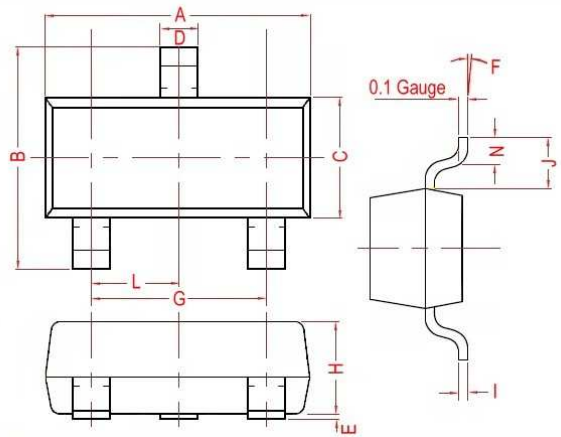


RoHS Compliant

Graphic Symbol

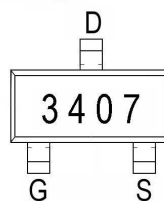


Package Dimension



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	1.90 Ref.	
B	2.30	3.00	H	0.90	1.30
C	1.20	1.75	I	0.05	0.21
D	0.30	0.50	J	0.58 Ref.	
E	0.01	0.15	L	0.95 Typ.	
F	0°	10°	N	0.20 Min.	

Marking



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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ³ ($T_A=25^\circ\text{C}$)	-4.1	A
	Continuous Drain Current ³ ($T_A=70^\circ\text{C}$)	-3.5	A
I_{DM}	Pulsed Drain Current ^{1,2} ($T_A=25^\circ\text{C}$)	-12	A
P_D	Power Dissipation ($T_A=25^\circ\text{C}$)	1.38	W
T_J/T_{STG}	Operating Junction and Storage Temperature	-55 to +150	$^\circ\text{C}$

Thermal Resistance Ratings

Symbol	Parameter	Maximum	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ³	90	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-1.0	-	-3.0	V
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}$, $I_D=-250\mu\text{A}$	-30	-	-	V
g_{fs}	Forward Transconductance	$V_{DS}=-5\text{V}$, $I_D=-4\text{A}$	-	8.2	-	S
I_{GSS}	Gate-Source Leakage Current	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$	-	-	± 100	nA
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$, $T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^\circ\text{C}$	-	-	-5	μA
$R_{DS(on)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-10\text{V}$, $I_D=-4.1\text{A}$	-	-	50	m Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-3.0\text{A}$	-	-	75	m Ω
V_{SD}	Diode Forward Voltage ²	$I_S=-1.0\text{A}$, $V_{GS}=0\text{V}$, $T_J=25^\circ\text{C}$	-	-	-1.2	V
I_S	Continuous Source Current (Diode)	$V_G=V_D=0\text{V}$, Force Current	-	-	-4.1	A
I_{SM}	Pulsed Source Current (Diode)		-	-	-8.2	

Notes

1. Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Surface mounted on 1 in² copper pad of FR4 board; 270 $^\circ\text{C/W}$ when mounted on min. copper pad.

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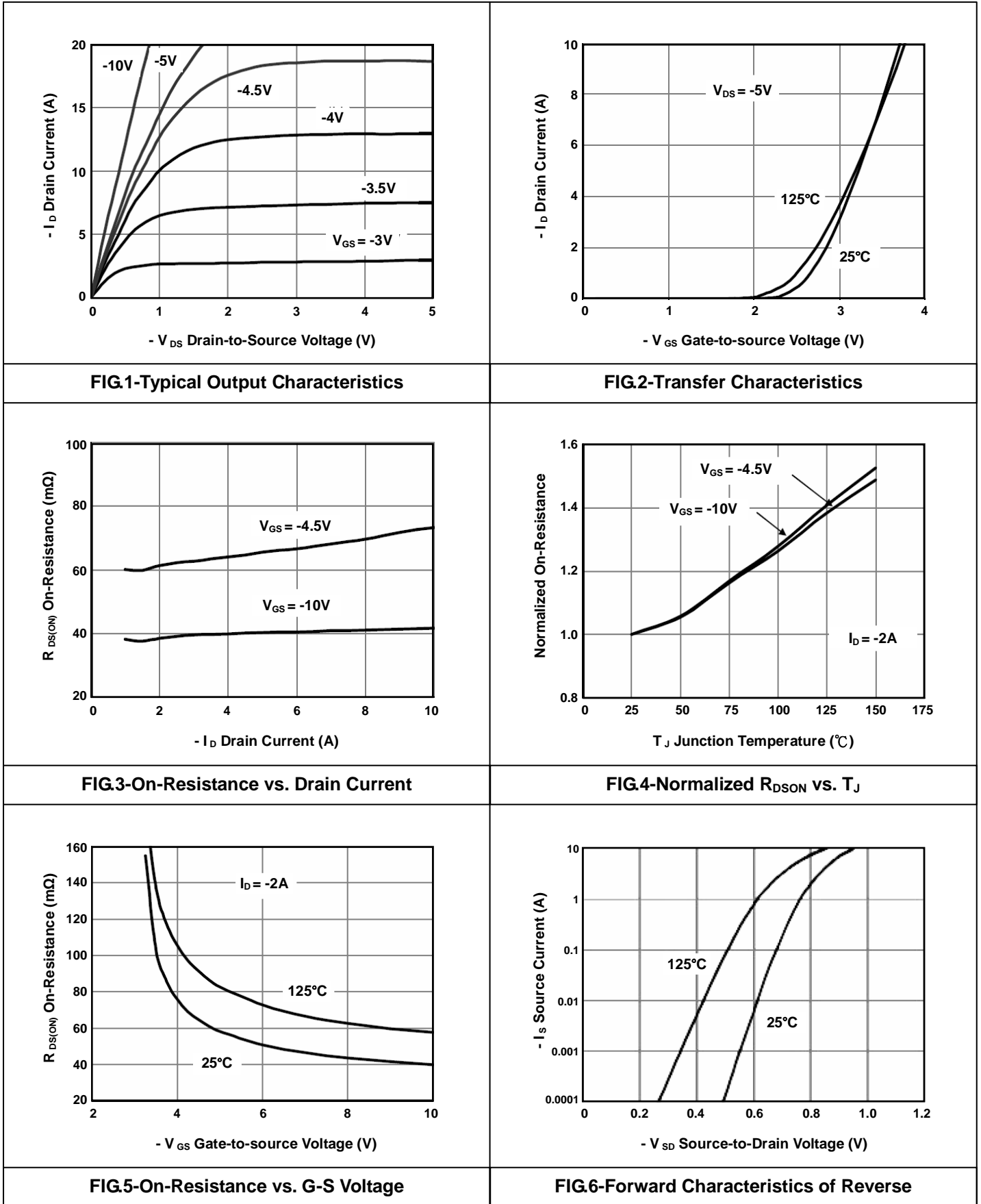
Dynamic and switching Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Q_g	Total Gate Charge ²	$V_{DS} = -24V$	--	15.2	--	nC
Q_{gs}	Gate-Source Charge	$I_D = -3A$	--	5.5	--	
Q_{gd}	Gate-Drain Charge	$V_{GS} = -10V$	--	1	--	
$t_{d(on)}$	Turn-On Delay Time ²	$V_{DS} = -15V$	--	8.6	--	ns
t_r	Rise Time	$I_D = -1A$	--	12.2	--	
$t_{d(off)}$	Turn-Off Delay Time	$V_{GS} = -10V$	--	36.6	--	
t_f	Fall Time	$R_G = 6\Omega, R_L = 15\Omega$	--	20.8	--	
C_{ISS}	Input Capacitance	$V_{DS} = -25V$	--	590	--	pF
C_{OSS}	Output Capacitance	$V_{GS} = 0V$	--	75	--	
C_{RSS}	Reverse Transfer Capacitance	$f = 1.0MHz$	--	10	--	

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- Typical Electrical Characteristics



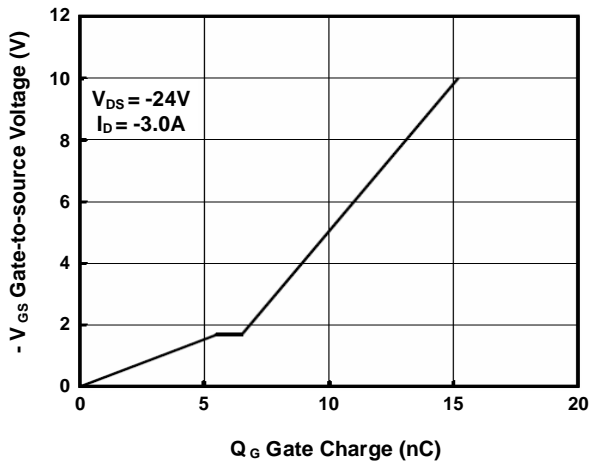


FIG.7-Gate Charge Characteristics

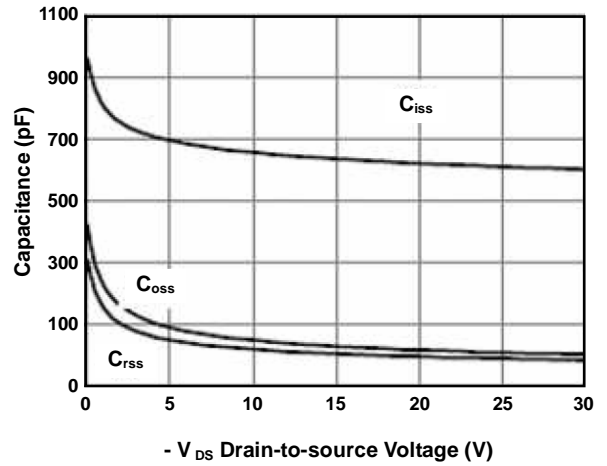


FIG.8-Capacitance Characteristics

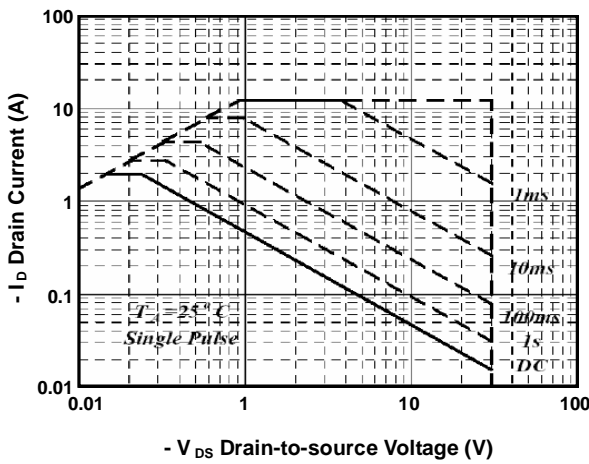


FIG.9-Safe Operating Area

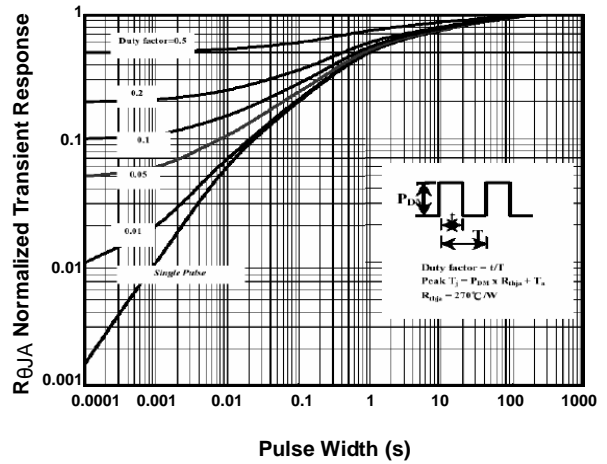


FIG.10-Transient Thermal Impedance

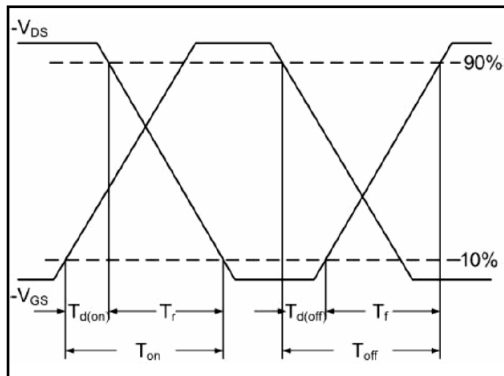


FIG.11-Switching Time Waveform

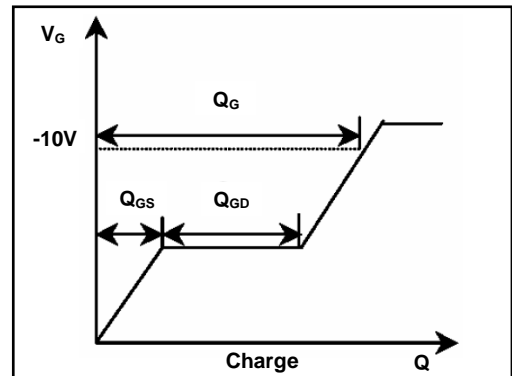


FIG.12-Gate Charge Waveform

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