

Features

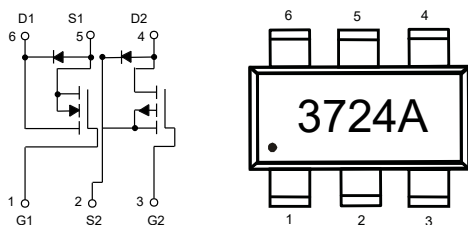
- High Density Cell Design for Low $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62.5°C/W Junction to Case

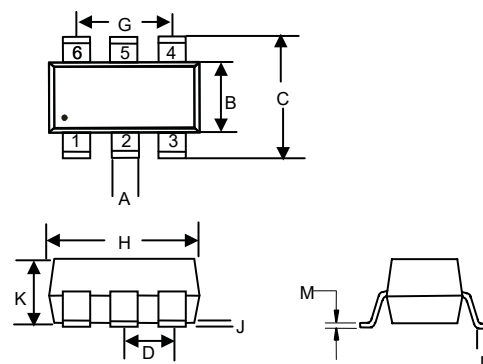
Parameter	Symbol	Rating	Unit
Total Power Dissipation	P_D	2	W
N-Channel			
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	4.5	A
P-Channel			
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-3.5	A

Internal Structure and Marking Code



Dual N&P-Channel MOSFET

SOT23-6L



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.012	0.020	0.30	0.50	
B	0.051	0.070	1.30	1.80	
C	0.087	0.126	2.20	3.20	
D	0.037		0.95		TYP.
G	0.074		1.90		TYP.
H	0.106	0.122	2.70	3.10	
J	0.002	0.006	0.05	0.15	
K	0.030	0.051	0.75	1.30	
L	0.012	0.024	0.30	0.60	
M	0.003	0.008	0.08	0.22	

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

N-Channel

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
Drain-Source On-Resistance ^(Note1)	$R_{DS(on)}$	$V_{GS}=10V, I_D=3A$			35	m Ω
		$V_{GS}=4.5V, I_D=2A$			50	m Ω
Diode Characteristics						
Diode Forward Voltage ^(Note1)	V_{SD}	$V_{GS}=0V, I_S=1A$			1.2	V
Reverse Recovery Time	t_{rr}	$I_{SD}=3.6 A, dI_{SD}/dt=100A/\mu s$		17.3		nS
Reverse Recovery Charge	Q_{rr}			1.66		nC
Dynamic Characteristics^(Note2)						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		315		pF
Output Capacitance	C_{oss}			59		
Reverse Transfer Capacitance	C_{rss}			48		
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=15V, I_D=3.6A$		6.08		nC
Gate-Source Charge	Q_{gs}			1.26		
Gate-Drain Charge	Q_{gd}			1.32		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=15V, R_{GEN}=3\Omega, R_L=4.1\Omega$		3.8		ns
Turn-On Rise Time	t_r			23.2		
Turn-Off Delay Time	$t_{d(off)}$			7		
Turn-Off Fall Time	t_f			18.6		

Electrical Characteristics @ 25°C (Unless Otherwise Specified)
P-Channel

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			-1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.5	V
Drain-Source On-Resistance ^(Note1)	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3A$			90	m Ω
		$V_{GS}=-4.5V, I_D=-2A$			115	m Ω
Diode Characteristics						
Diode Forward Voltage ^(Note1)	V_{SD}	$V_{GS}=0V, I_S=-1A$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_{SD}=-3A, dI_{SD}/dt=100A/\mu s$		25		nS
Reverse Recovery Charge	Q_{rr}			3.8		nC
Dynamic Characteristics^(Note2)						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		365		pF
Output Capacitance	C_{oss}			59		
Reverse Transfer Capacitance	C_{rss}			45		
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-15V, I_D=-3A$		7.5		nC
Gate-Source Charge	Q_{gs}			1.7		
Gate-Drain Charge	Q_{gd}			1.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DS}=-15V, R_{GEN}=2.5\Omega, I_{DS}=-1A$		3.2		ns
Turn-On Rise Time	t_r			17.8		
Turn-Off Delay Time	$t_{d(off)}$			18		
Turn-Off Fall Time	t_f			23.5		

Notes:

1. Pulse Test: Pulse Width=300 μs , Duty Cycle $\leq 2\%$.
2. These Parameters Have No Way To Verify.

Curve Characteristics (N-Channel)

Fig. 1 - Output Characteristics

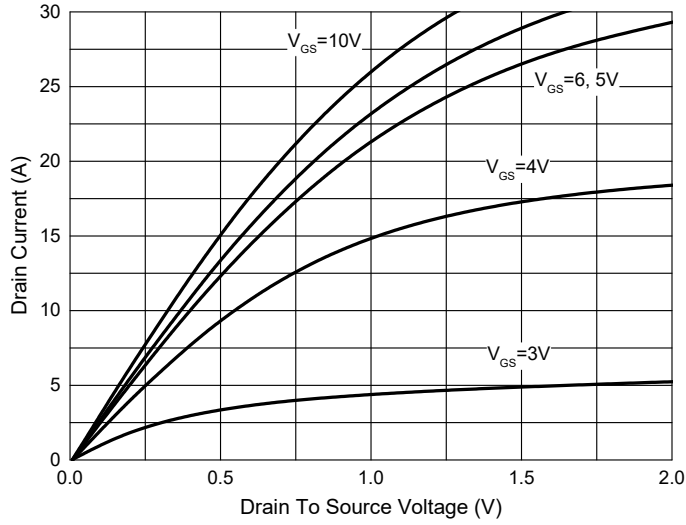


Fig. 2 - Transfer Characteristics

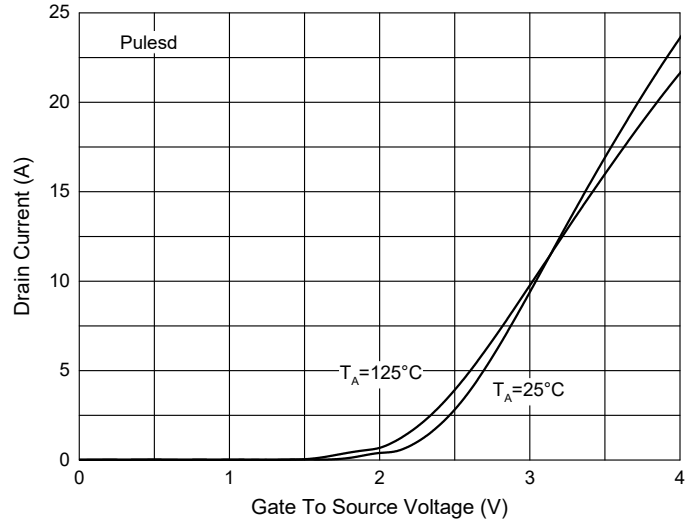


Fig. 3 - $R_{DS(ON)} - I_D$

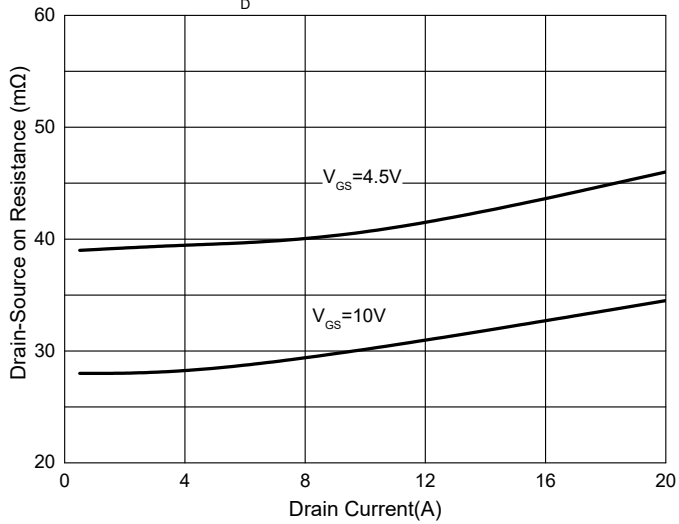


Fig. 4 - Normalized On Resistance Characteristics

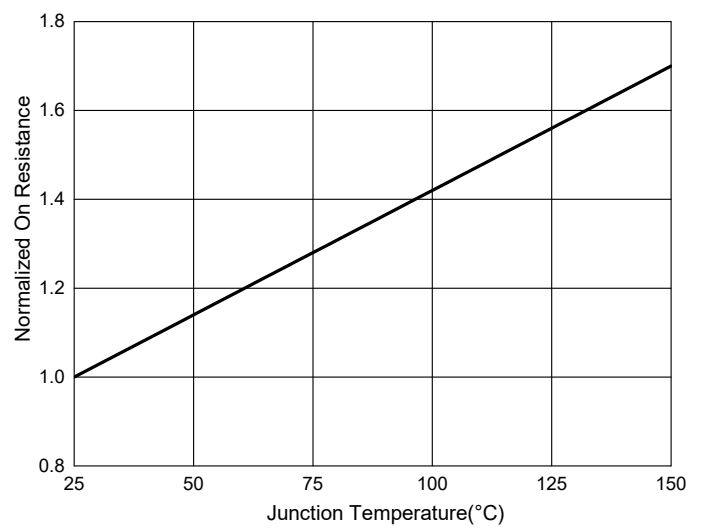


Fig. 5 - Gate Charge

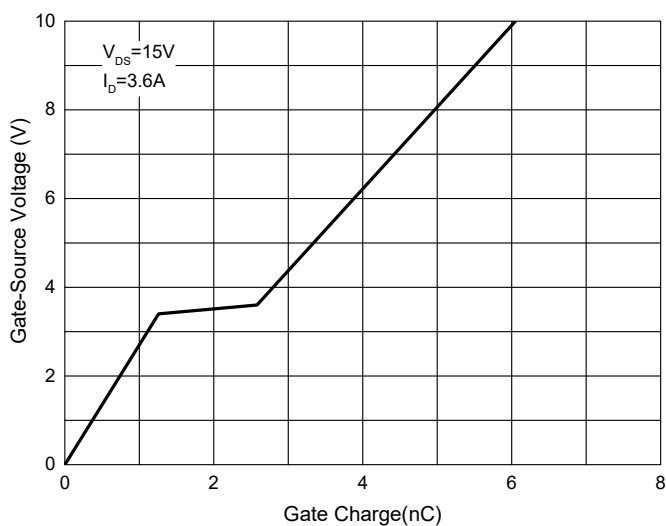
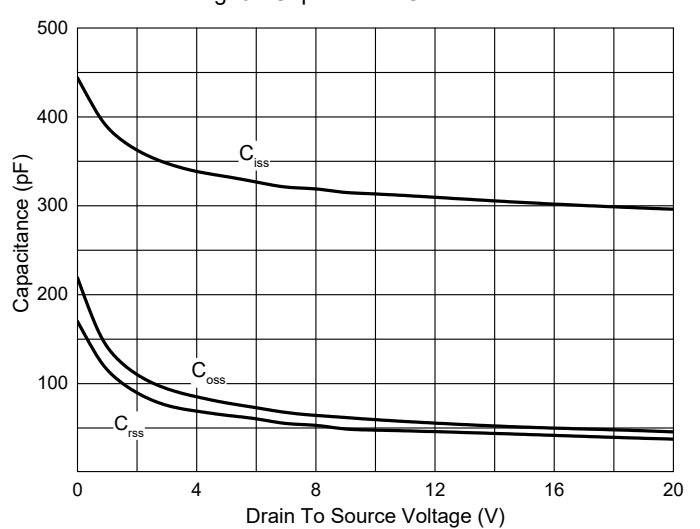


Fig. 6 - Capacitance Characteristics



Curve Characteristics (P-Channel)

Fig. 7 - Output Characteristics

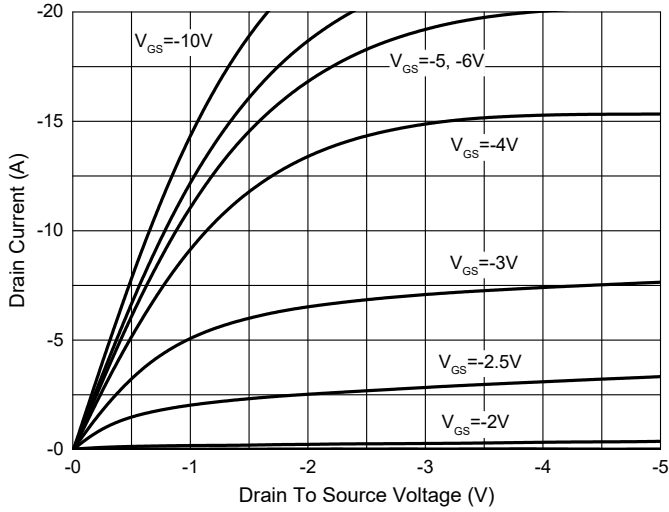


Fig. 8 - Transfer Characteristics

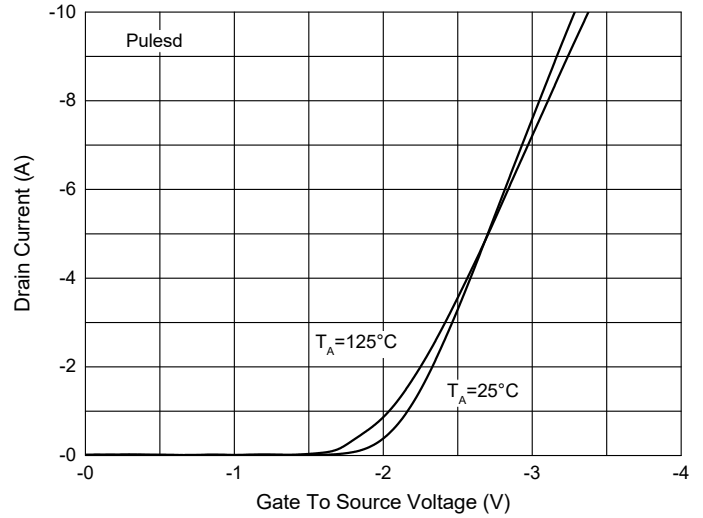


Fig. 9 - $R_{DS(ON)} - I_D$

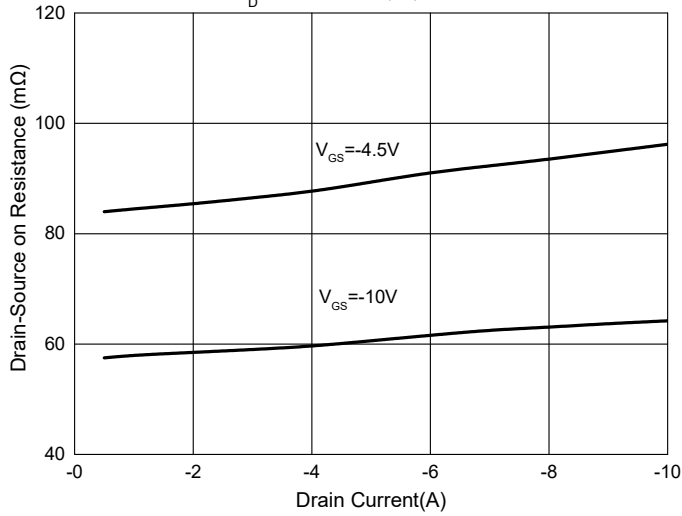


Fig. 10 - Normalized On Resistance Characteristics

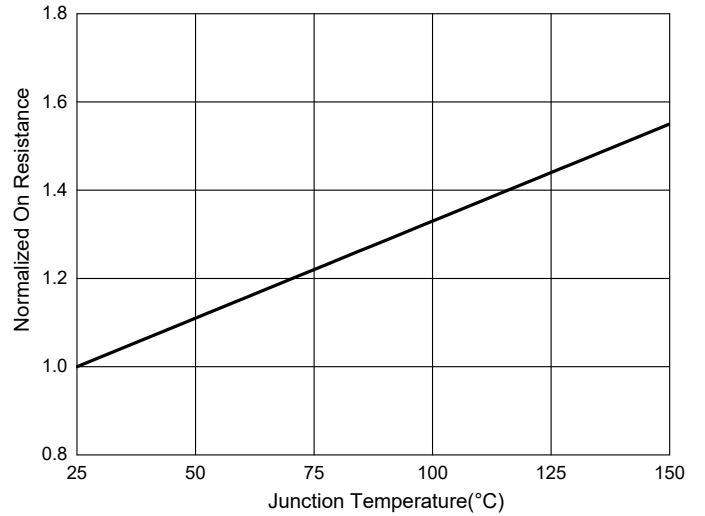


Fig. 11 - Gate Charge

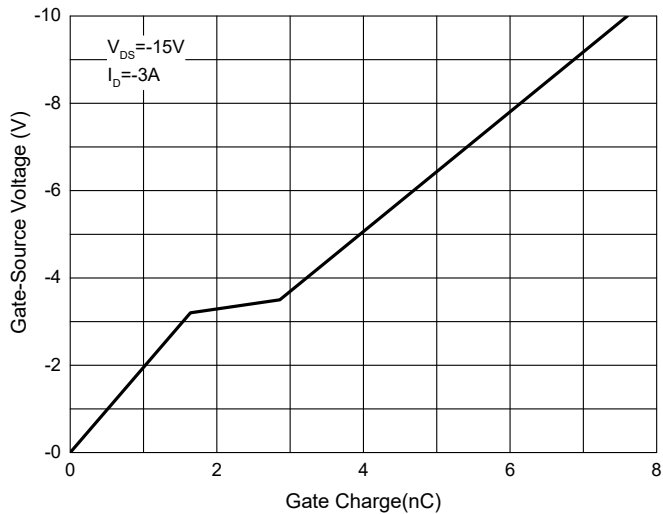
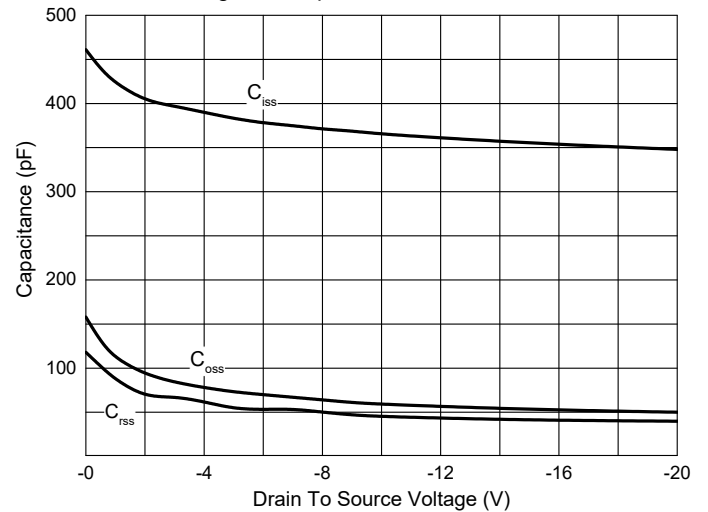


Fig. 12 - Capacitance Characteristics



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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