

P-Channel MOSFET

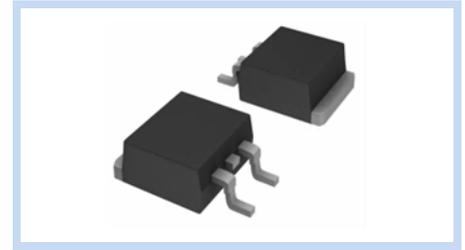
60V 18A 40W TO-252

MFT6P18T252A

MERITEK

FEATURE

- Super High Density Cell Design For Low On State Resistance
- Fast Switching Speed
- Low Gate Charge
- Fully Avalanche Rated
- Application: Load Switch, LED Display, Black Light Inverter for LED Display, Full Bridge DC/DC Converter



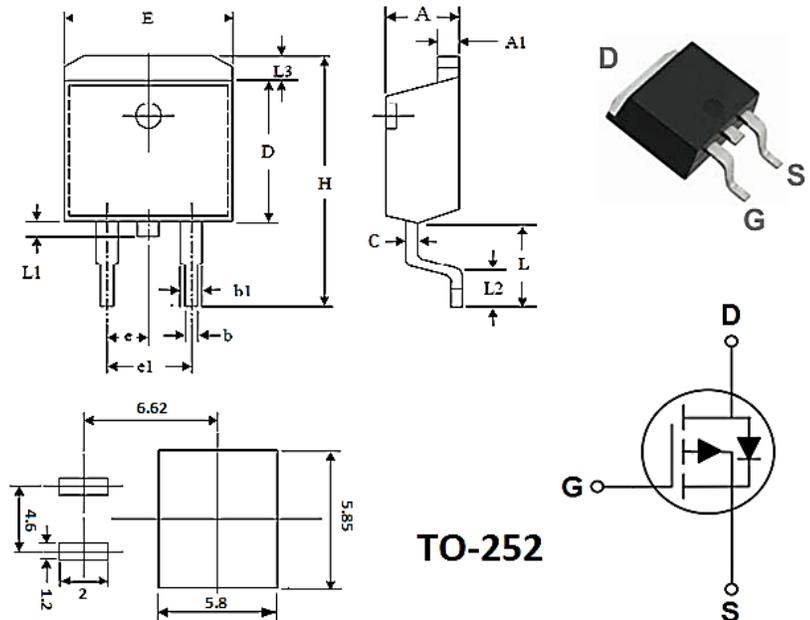
MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous , $T_J=150^{\circ}\text{C}$	I_D	$T_C=25^{\circ}\text{C}$	-18
		$T_C=70^{\circ}\text{C}$	-12
Drain Current – Pulsed	I_{DM}	-50	A
Continuous Source-Drain Diode Current	I_S	-10	A
Single Pulse Avalanche Current	I_{AS}	L=0.1mH	-12
Avalanche Energy		L=0.1mH	23
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	40
		$T_A=70^{\circ}\text{C}$	15
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$

Note: $T_C = 25^{\circ}\text{C}$ unless otherwise noted

DIMENSIONS

Item	Min (mm)	Max (mm)
A	2.20	2.40
A1	0.43	0.58
b	0.50	0.70
C	0.43	0.58
D	5.40	5.70
e	2.30 Typ.	
E	6.35	6.65
H	9.50	9.90
L1	0.60	0.90
L2	1.40	1.78
L3	1.35	1.65



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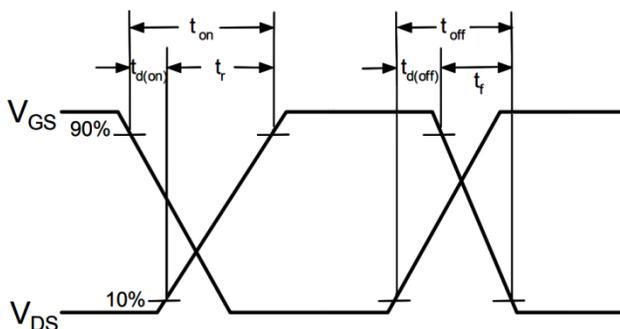
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ELECTRICAL CHARACTERISTICS

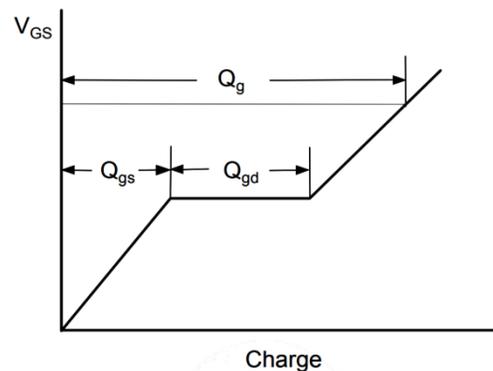
Static Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-60	--	--	V
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.0	--	-2.5	V
Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=-48V, V_{GS}=0V$	I_{DSS}	--	--	-1	uA
	$V_{DS}=-48V, V_{GS}=0V, T_J=85^\circ C$		--	--	-20	
On-State Drain Current	$V_{DS} \geq -5V, V_{GS}=-10V$	$I_{D(ON)}$	-20	--	--	A
Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-18A$	$R_{DS(ON)}$	--	55	68	mΩ
	$V_{GS}=4.5V, I_D=-12A$		--	65	78	
Forward Transconductance	$V_{DS}=-15V, I_D=-3.2A$	g_{FS}	--	12	--	S
Diode Forward Voltage	$I_S=-3A, V_{GS}=0V$	V_{SD}	--	-0.8	-1.3	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=-30V, V_{GS}=-10V, I_D=-10A$	Q_g	--	25	40	nC
Gate-Source Charge		Q_{gs}	--	5	--	
Gate-Drain Charge		Q_{gd}	--	8	--	
Turn-On Delay Time	$V_{DD}=-30V, R_L=3\Omega, I_D=-18A, V_{GEN}=-10V, R_G=2.5\Omega$	$T_{d(on)}$	--	10	20	nS
Rise Time		T_r	--	10	20	
Turn-Off Delay Time		$T_{d(off)}$	--	45	80	
Fall Time		T_f	--	25	40	
Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1.0MHz$	C_{iss}	--	1200	2000	pF
Output Capacitance		C_{oss}	--	140	--	
Reverse Transfer Capacitance		C_{rss}	--	90	--	

Note: $T_C = 25^\circ C$ unless otherwise noted

Switching Time Waveform



Gate Charge Waveform



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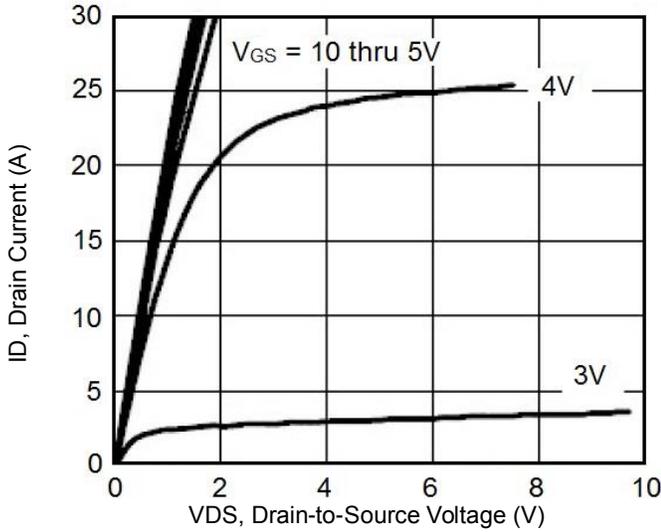
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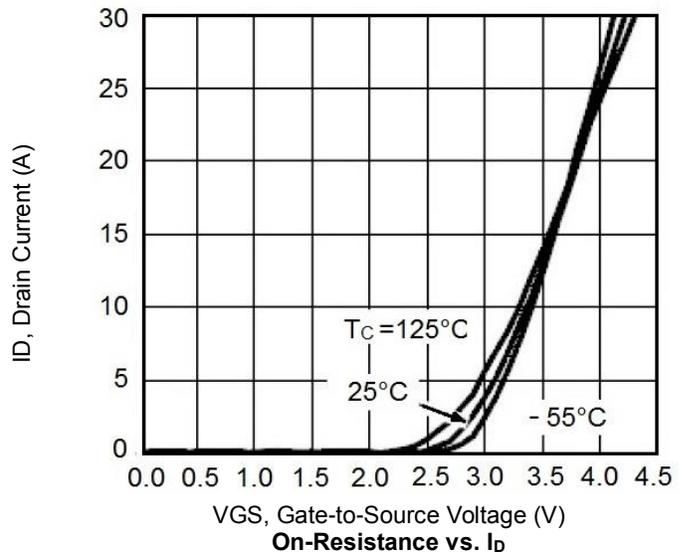
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CHARACTERISTIC CURVES

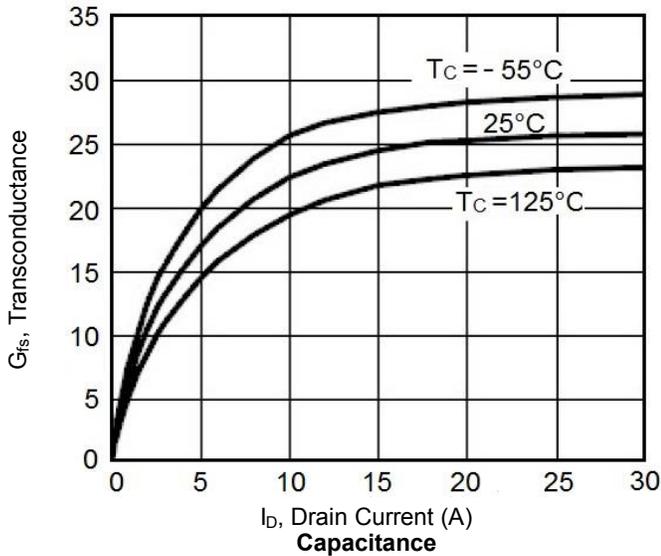
Output Characteristics



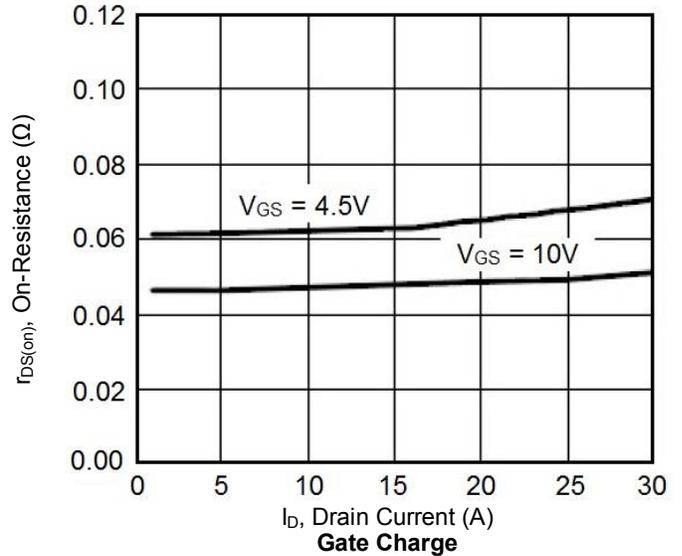
Transfer Characteristics



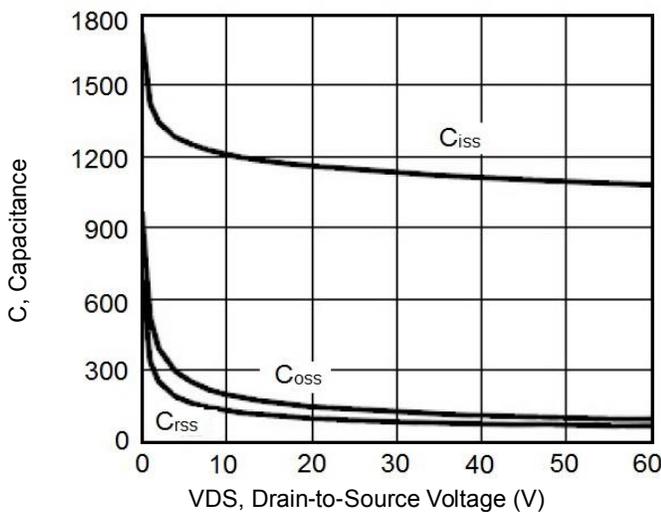
Transconductance



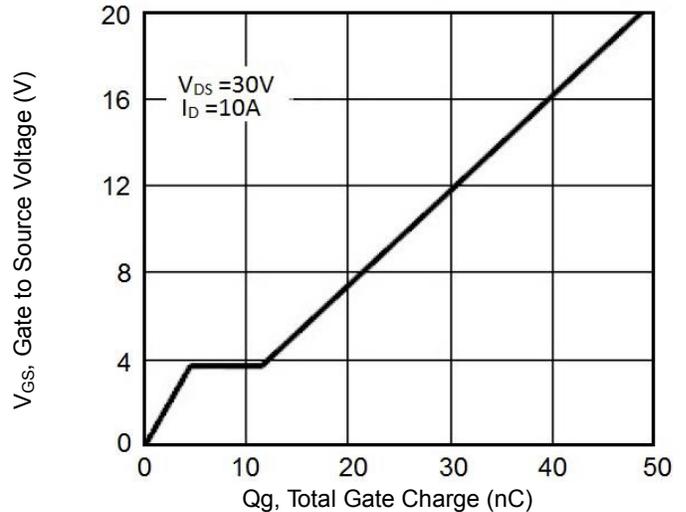
On-Resistance vs. I_D



Capacitance



Gate Charge



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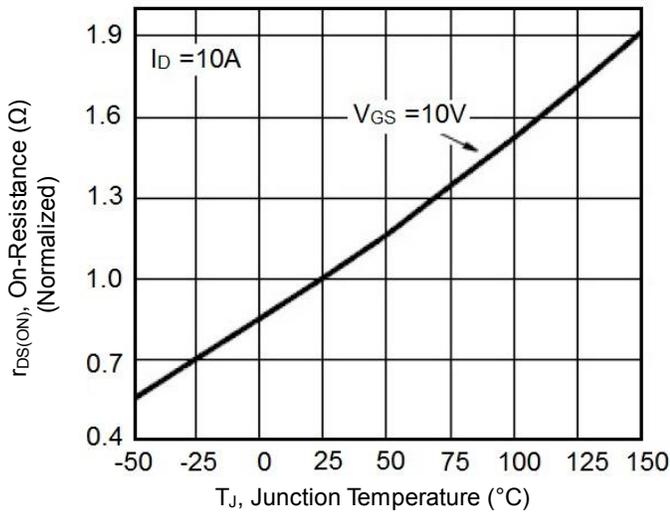
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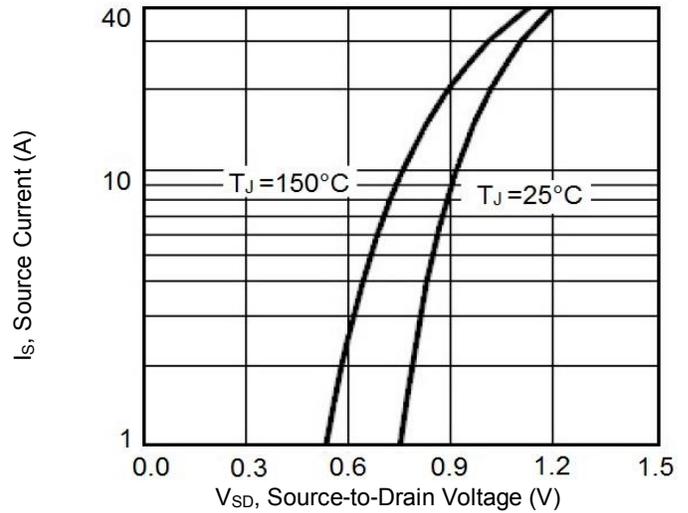
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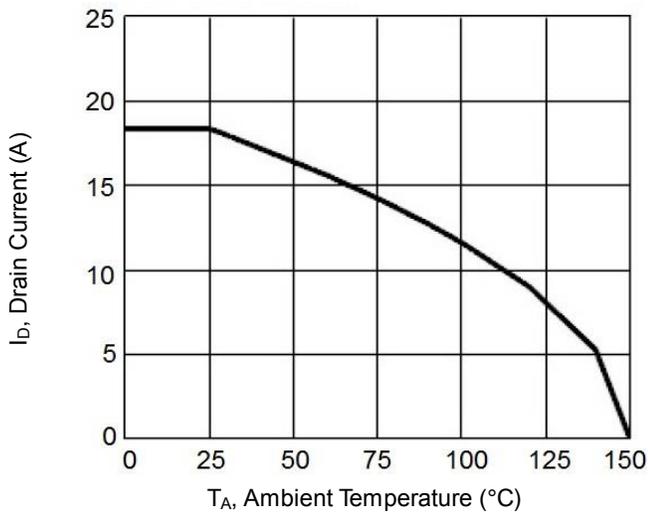
On Resistance vs. T_J



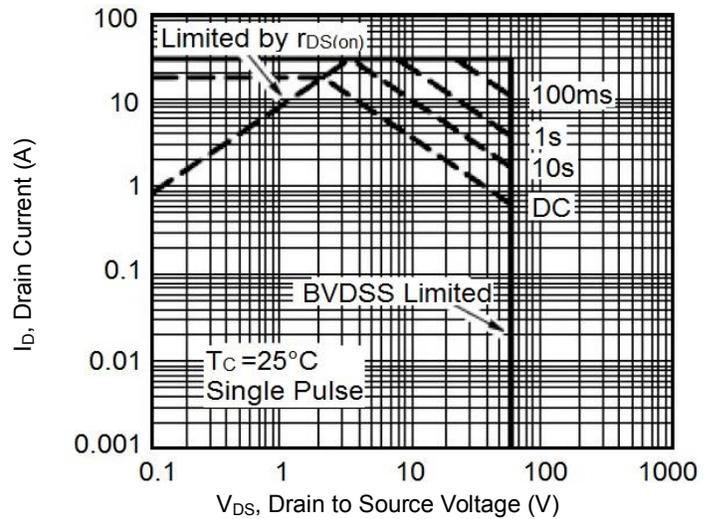
Source-Drain Diode Forward Voltage



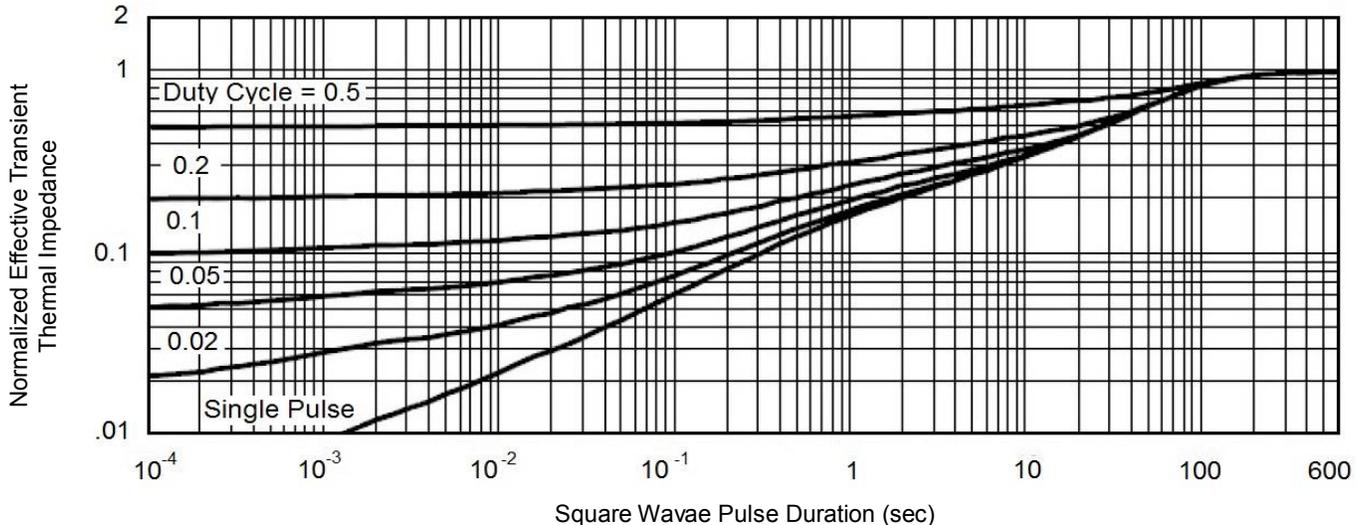
Maximum Drain Current vs Ambient Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction to Case



*Specifications subject to change without notice.