

# P-Channel MOSFET

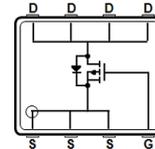
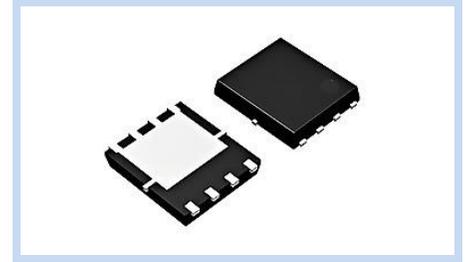
## 60V 100A 142W DFN5x6-8L

MFT6P100D56

MERITEK

### FEATURE

- $R_{DS(ON)} < 8.5m\Omega$ ,  $V_{GS} = -10V$ ,  $I_D = -20A$
- $R_{DS(ON)} < 10m\Omega$ ,  $V_{GS} = -4.5V$ ,  $I_D = -15A$
- Excellent Low  $R_{DS(ON)}$
- Low Gate Charge
- Application: Battery Protection, Load Switch



### MECHANICAL DATA

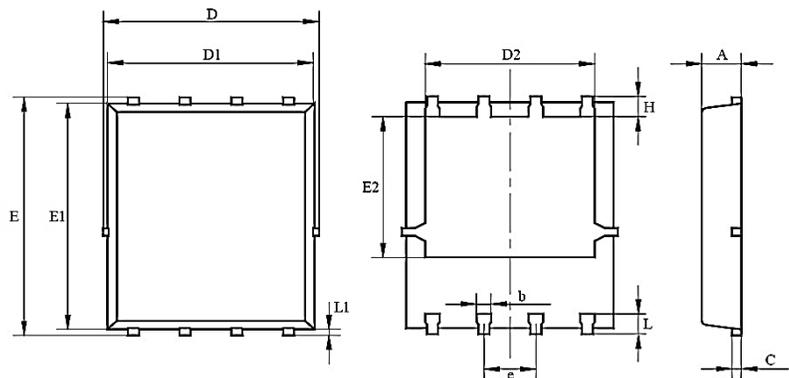
- Case: DFN5x6-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026

### MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current – Continuous	$I_D$	$V_{GS} = -10V$ , $T_C = 25^\circ C$	-100
		$V_{GS} = -10V$ , $T_C = 100^\circ C$	-65
Drain Current – Pulsed	$I_{DM}$	-300	A
Power Dissipation	$P_D$	142	W
Single Pulse Avalanche Energy	$E_{AS}$	650	mJ
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.88	$^\circ C/W$
Operating Junction and Storage Temperature	$T_J, T_{STG}$	-55 to +150	$^\circ C$

### DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	1.030	1.170
b	0.340	0.480
c	0.245 REF	
D	4.800	5.400
D1	4.800	5.000
D2	4.110	4.310
e	1.270 BSC	
E	5.950	6.150
E1	5.650	5.850
E2	3.300	3.500
L	0.380	0.500
L1	0.050	0.250
H	0.380	0.500



# P-Channel MOSFET

## 60V 100A 142W DFN5x6-8L

MFT6P100D56

MERITEK

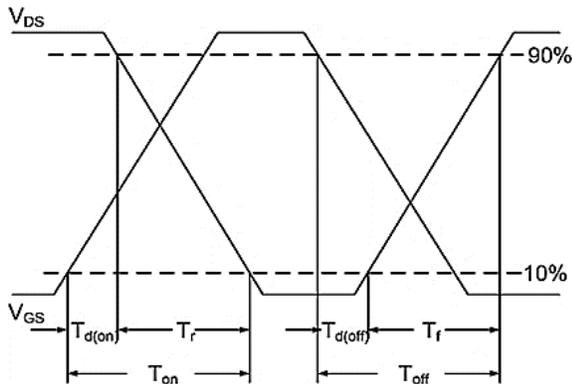
### ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-60	--	--	V
Zero Gate Voltage Drain Current	$V_{DS}=-60V, V_{GS}=0V$	$I_{DSS}$	--	--	-1	$\mu A$
Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	$I_{GSS}$	--	--	$\pm 100$	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-20A$	$R_{DS(ON)}$	--	6.8	8.5	m $\Omega$
	$V_{GS}=-4.5V, I_D=-15A$		--	7.8	10	
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.2	-1.6	-2.5	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=-48V, V_{GS}=-10V, I_D=-5A$	$Q_g$	--	141	--	nC
Gate-Source Charge		$Q_{gs}$	--	17	--	
Gate-Drain Charge		$Q_{gd}$	--	28.6	--	
Turn-On Delay Time	$V_{DS}=-48V, V_{GS}=-10V, R_G=6\Omega, I_D=-1A$	$T_{d(on)}$	--	70	--	nS
Rise Time		$T_r$	--	205	--	
Turn-Off Delay Time		$T_{d(off)}$	--	402	--	
Fall Time		$T_f$	--	402	--	
Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1MHz$	$C_{iss}$	--	8620	--	pF
Output Capacitance		$C_{oss}$	--	486	--	
Reverse Transfer Capacitance		$C_{rss}$	--	288	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	--	$I_S$	--	--	-100	A
Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	$V_{SD}$	--	--	-1.2	V

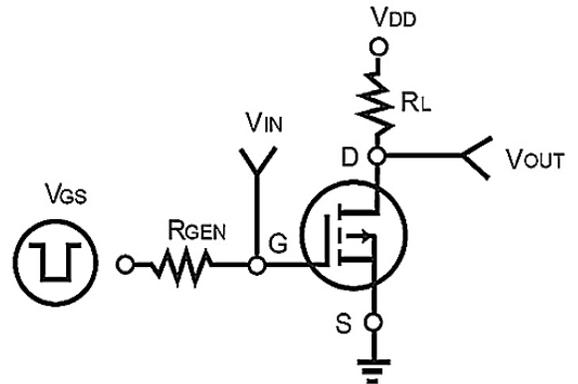
Note:

- $T_C = 25^\circ C$  unless otherwise noted.
- The data tested by surface mounted on 1 inch<sup>2</sup> FR-4 board with 2oz copper.
- The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycles  $\leq 2\%$ .
- The EAS data shows Max. rating. The test condition is  $V_{DD}=-48V, V_{GS}=-10V, L=0.1mH, I_{AS}=-80A$ .
- The power dissipation is limited by  $150^\circ C$  junction temperature.
- Guaranteed by design, not subject to production testing.

Switching Time Waveform

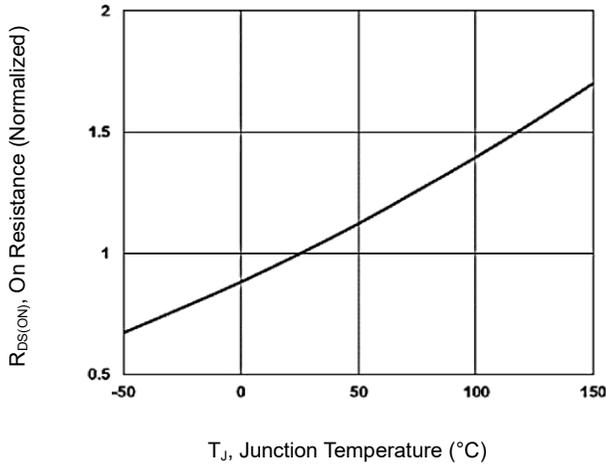


Switching Test Circuit

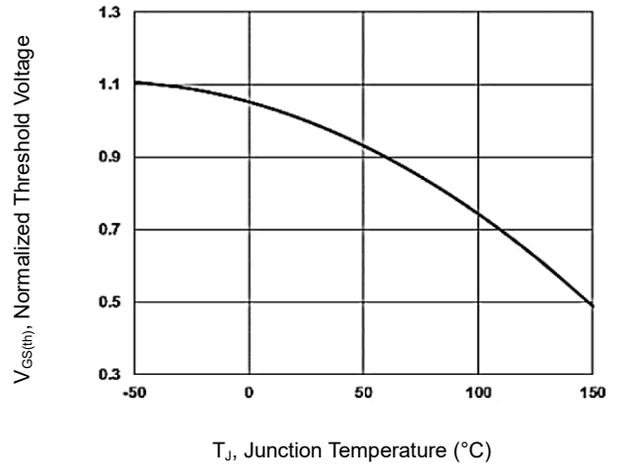


**CHARACTERISTIC CURVES**

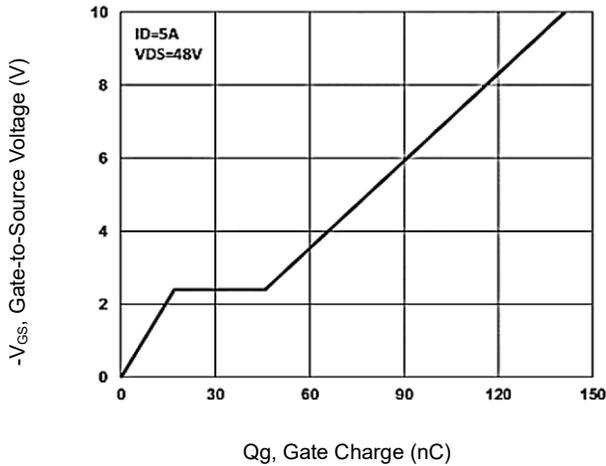
On-Resistance vs. Temperature



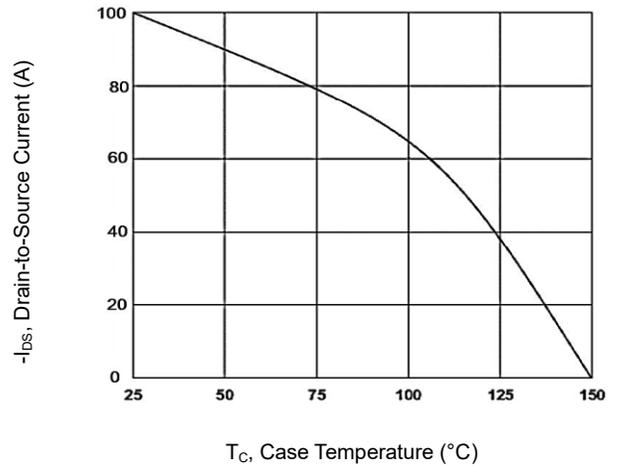
Threshold Voltage vs. Junction Temperature



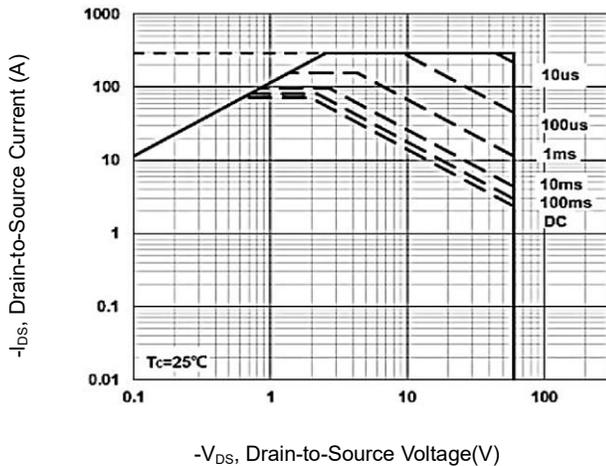
Gate Charge Characteristics



Maximum Drain Current vs. Temperature



Maximum Safe Operating Area



Normalized Transient Thermal Response Curves

