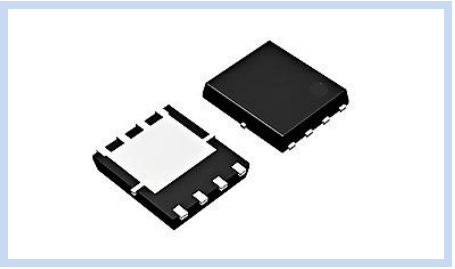
P-Channel MOSFET
100V 14A 50W DFN3x3-8L

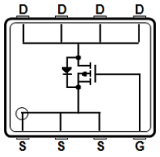
MFT10P14D33

MERITEK

FEATURE

- $R_{DS(ON)}$<88mΩ, V_{GS}=-10V, I_D=-10A
- $R_{DS(ON)}$<115mΩ, V_{GS}=-4.5V, I_D=-5A
- High Density Cell Design for Low $R_{DS(ON)}$
- Fast Switching Characteristics
- Advanced Split Gate Trench Technology
- Application: DC/DC Converter, Power Management





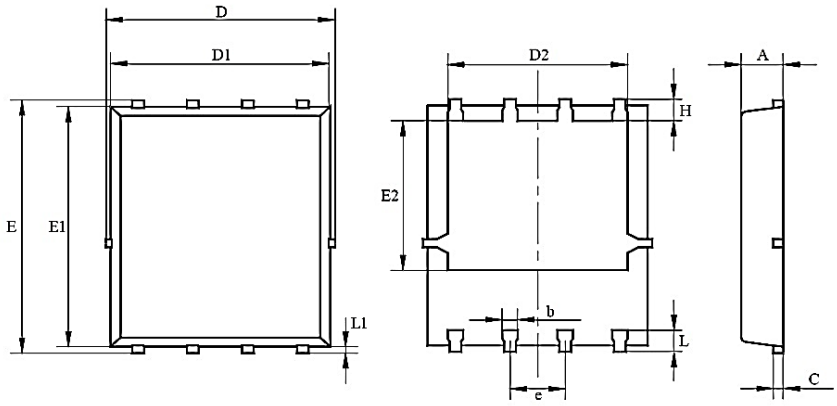
RoHS

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	T_C= 25°C	I_D	-14	A
Drain Current – Pulsed		I_{DM}	-56	A
Power Dissipation	T_C= 25°C	P_D	50	W
Single Pulse Avalanche Energy		E_{AS}	110	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	2.5	°C/W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to +150	°C

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	0.650	0.850
b	0.200	0.400
c	0.152 REF	
D	3.000	3.300
D1	2.900	3.100
D2	2.300	2.600
E	3.150	3.450
E1	2.900	3.100
E2	1.535	1.935
e	0.550	0.750
L	0.300	0.500
L1	0.050	0.200
H	0.315	0.515

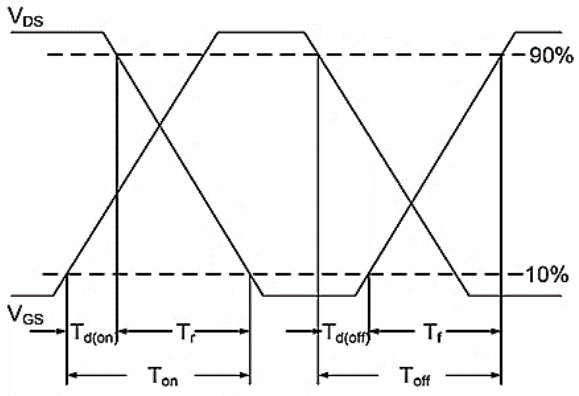


ELECTRICAL CHARACTERISTICS

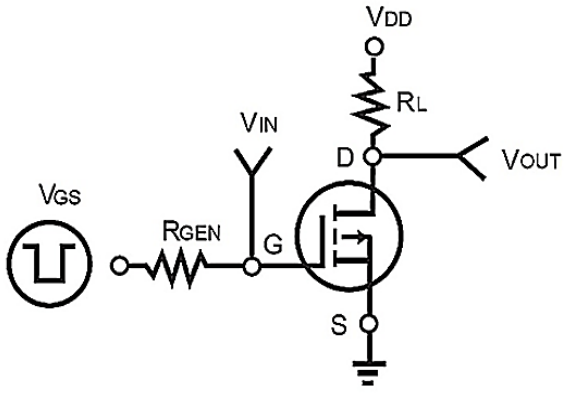
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	BV_{DSS}	-100	--	--	V
Zero Gate Voltage Drain Current	V_{DS}=-80V, V_{GS}=0V, T_J=25°C	I_{DSS}	--	--	-1	μA
Gate-Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	I_{GSS}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=-10V, I_D=-10A	$R_{DS(ON)}$	--	70	88	mΩ
	V_{GS}=-4.5V, I_D=-5A		--	85	115	
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250μA	$V_{GS(th)}$	-1	-1.7	-2.5	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=-50V, V_{GS}=-10V, I_D=-10A	Q_g	--	20	--	nC
Gate-Source Charge		Q_{gs}	--	4	--	
Gate-Drain Charge		Q_{gd}	--	4.4	--	
Turn-On Delay Time	V_{DS}=-50V, V_{GS}=-10V, R_G=9.1Ω, I_D=-20A	$T_{d(on)}$	--	15	--	nS
Rise Time		T_r	--	30	--	
Turn-Off Delay Time		$T_{d(off)}$	--	73	--	
Fall Time		T_f	--	76	--	
Input Capacitance	V_{DS}=-50V, V_{GS}=0V, f=1MHz	C_{iss}	--	1050	--	pF
Output Capacitance		C_{oss}	--	120	--	
Reverse Transfer Capacitance		C_{rss}	--	23	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Current	--	I_S	--	--	-14	A
Diode Forward Voltage	V_{GS}=0V, I_S=-1A, T_J=25°C	V_{SD}	--	--	-1.2	V
Reverse Recovery Time	V_{DS}=-50V, I_S=-5A, di/dt=100A/μs, T_J=25°C	t_{rr}	--	23	--	nS
Reverse Recovery Charge		Q_{rr}	--	68	--	nC

Note:
1. EAS test condition: T_J=25°C, V_{DD}=-20V, V_G=-10V, L=0.5mH, R_G=25Ω.
2. Guaranteed by design, not subject to production testing.

Switching Time Waveform

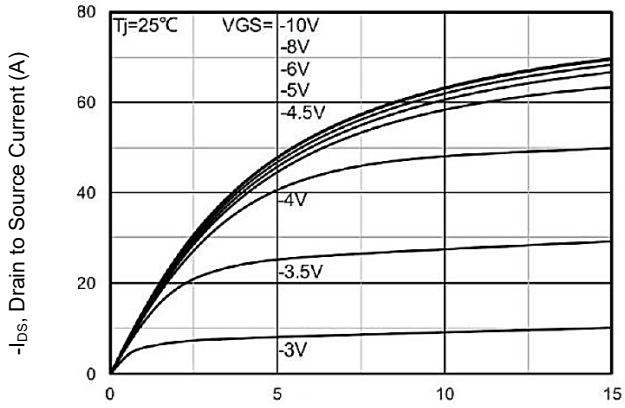


Switching Test Circuit

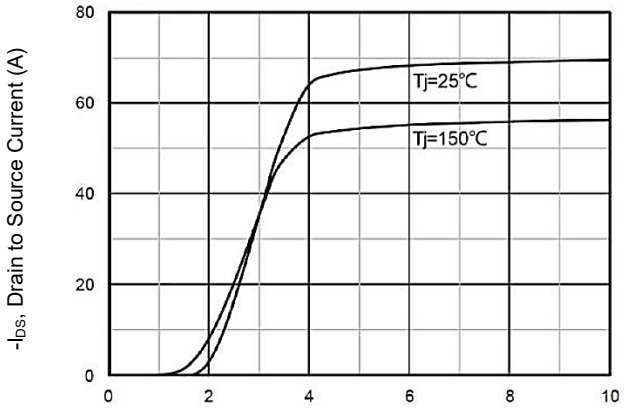


CHARACTERISTIC CURVES

Output Characteristics

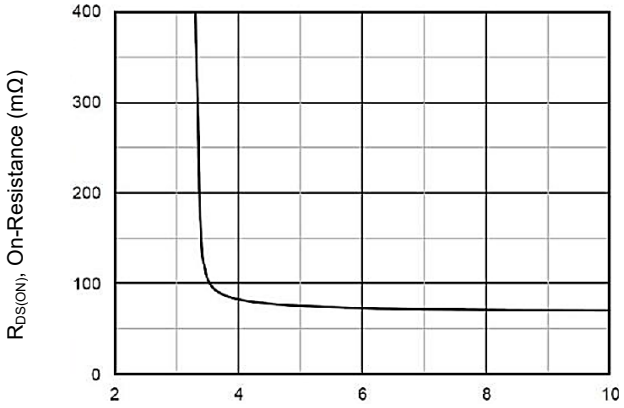


Transfer Characteristics

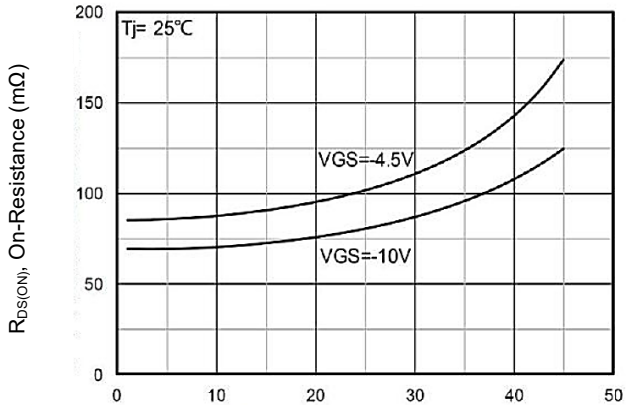


On-Resistance vs. Temperature

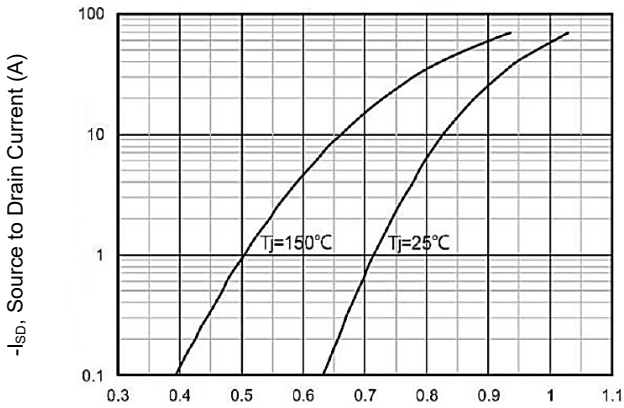
On-Resistance vs. Gate to Source Voltage



On-Resistance vs. Drain Current

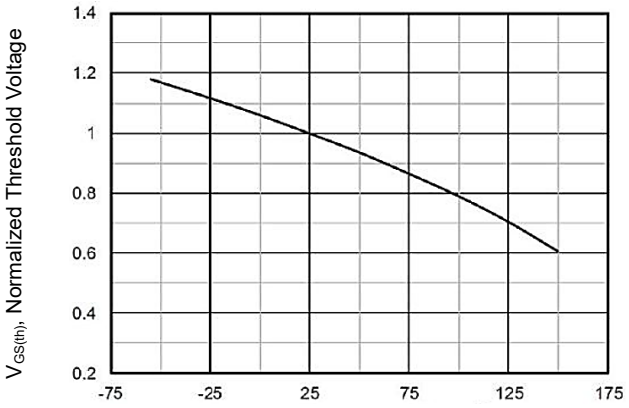


Body Diode Characteristics

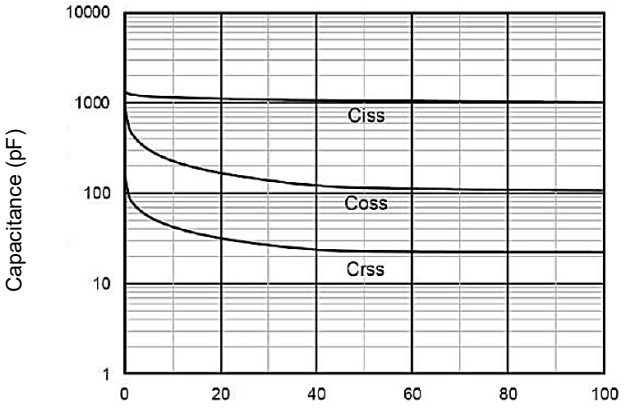


CHARACTERISTIC CURVES

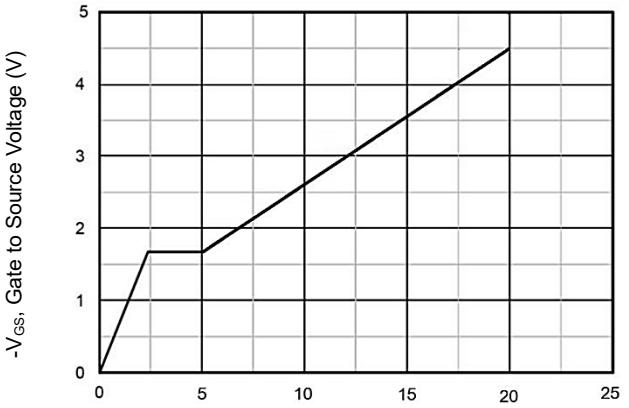
Threshold Voltage vs. Temperature



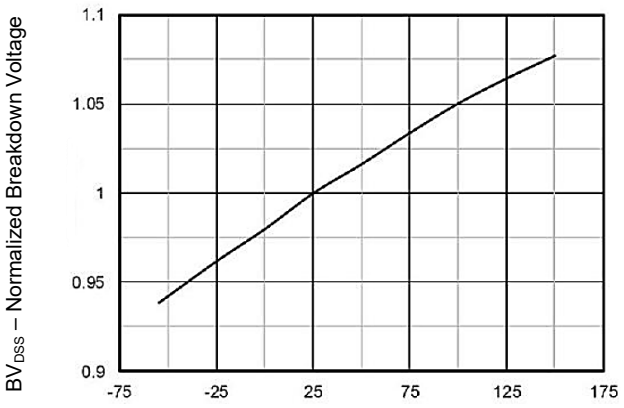
Capacitance



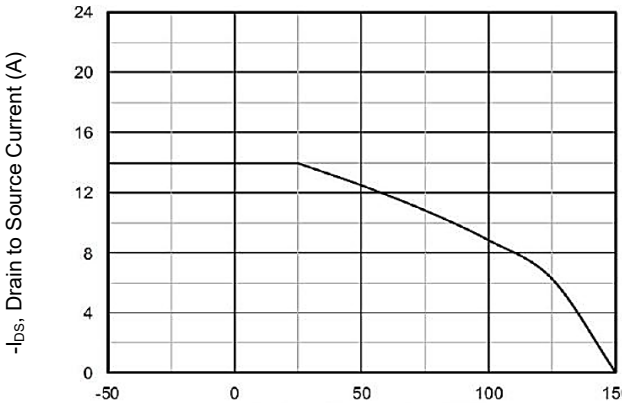
Gate Charge Characteristics



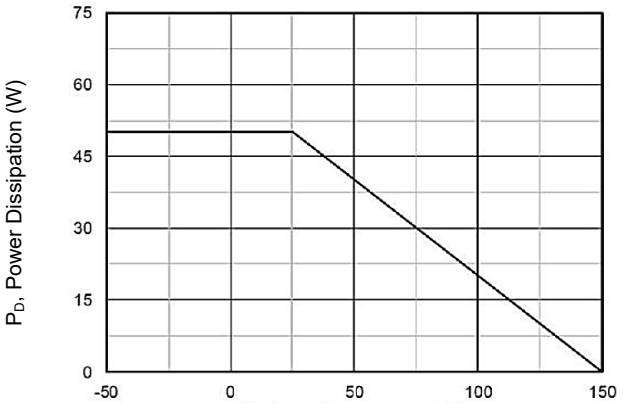
Breakdown Voltage vs. Temperature



Current Dissipation

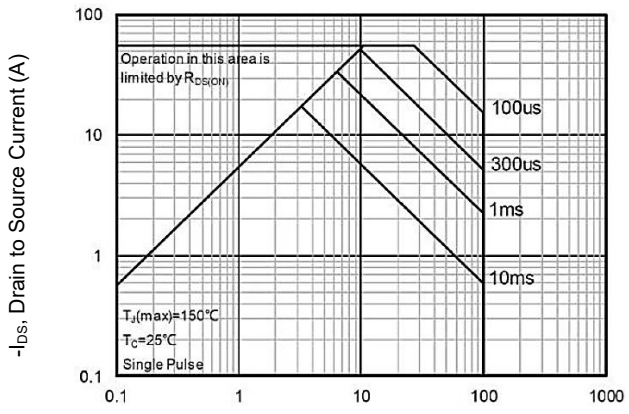


Power Derating Curve



CHARACTERISTIC CURVES

Maximum Safe Operating Area



Maximum Transient Thermal Impedance