MS44P15 P-Channel MOSFET

FEATURES

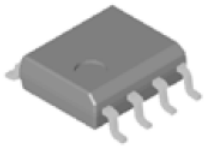
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low rDS(on) and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

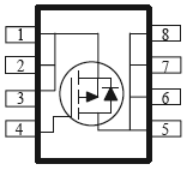
• Low rDS(on) provides higher efficiency and extends battery life

• Low thermal impedance copper lead frame SOIC-8 saves board space

• Fast switching speed

• High performance trench technology





V_{DS}	$R_{DS(ON)}$ (mohm)	I_D (A)
-20V	8.4 @ V_{GS} = -4.5V	-13.5
	10.4 @ V_{GS} = -2.5V	-12

RoHS
COMPLIANT

HALOGEN
FREE
Avaliable

Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	-20	V
Gate-Source Voltage	VGS	±12	V
Continuous Drain Current @ TC=25°C	ID	-13.5	A
Pulsed Drain Current	IDM	±50	A
Continuous Source Current (Diode Conduction)	IS	-2.1	A
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C
Power Dissipation@ TC=25°C	PW	3.1	W

NOTE:

1. Repetitive rating; pulse width limited by maximum junction temperature.

Thermal characteristics (Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Maximum Junction-to-Ambien	RθJA	50	°C/W
Maximum Junction-to-Case	RθJc	25	

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Characteristics (Tc=25°C, unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics					
VGS	VGS = VDS, ID = 250 uA	-0.7	-	-	V
IGSS	VDS = 0 V, VGS = ± 12 V	-	-	±100	nA
IDSS	VDS = -16V, VGS = 0 V	-	-	-1.0	uA
	VDS = -16V, VGS = 0 V,Tj =55oC	-	-	-5.0	uA
ID(on)	VDS = -4.5 V, VGS = 10 V	-50	-	-	A
RDS(on)	VGS = -4.5 V, ID = 13.5A	-	-	8.4	mΩ
	VGS = -2.5 V, ID = -12 A	-	-	10.2	mΩ
gfs	VDS = -15 V, ID = 11.5 A	-	70	-	S
VSD	IS = 2.5 A, VGS = 0 V	-	-0.6	-	V
Dynamic Characteristics					
Qg	VDS =-10V,VGS =-4.5V, ID = -13.5 A	-	66	-	nC
Qgs		-	13	-	nC
Qgd			17		
td(on)	VDD =-10V,RL =6Ω ,ID =-1A, VGEN = -4.5 V	-	20	-	nS
tr		-	23	-	nS
td(off)		-	289	-	nS
tf		-	134	-	nS

NOTE:

Pulse test: PW <= 300us duty cycle <= 2%.

Guaranteed by design, not subject to production testing.

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- **Characteristic Curves**

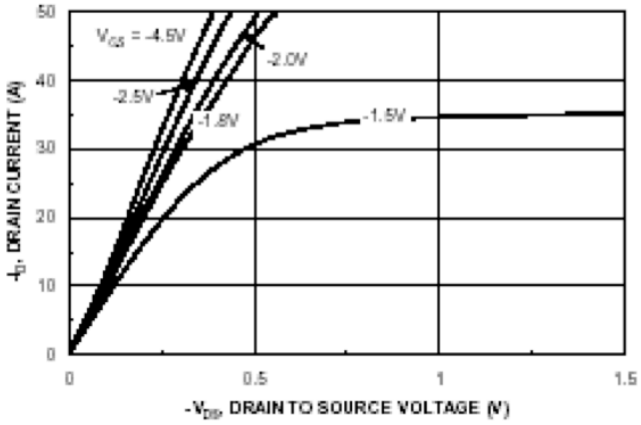

Figure 1. On-Region Characteristics

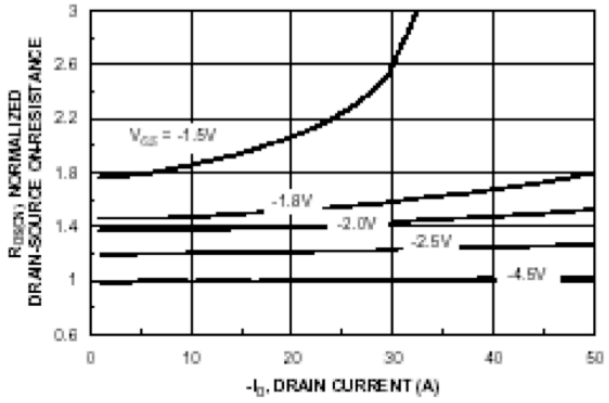

Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

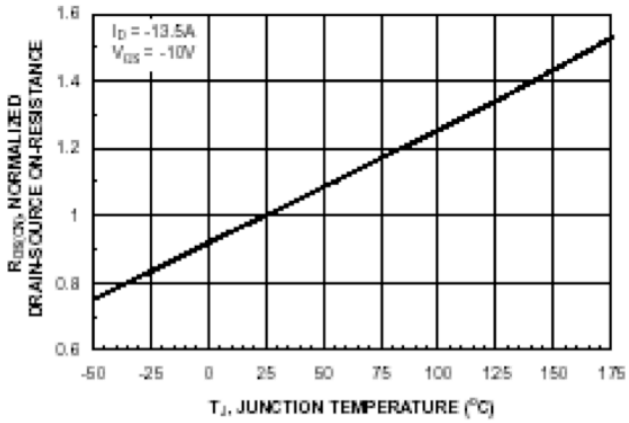

Figure 3. On-Resistance Variation with Temperature

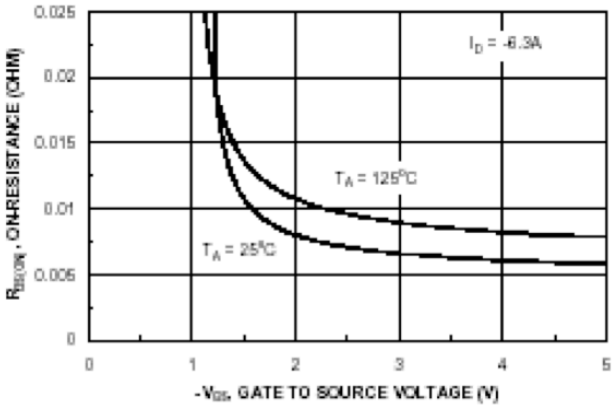

Figure 4. On-Resistance Variation with Gate to Source Voltage

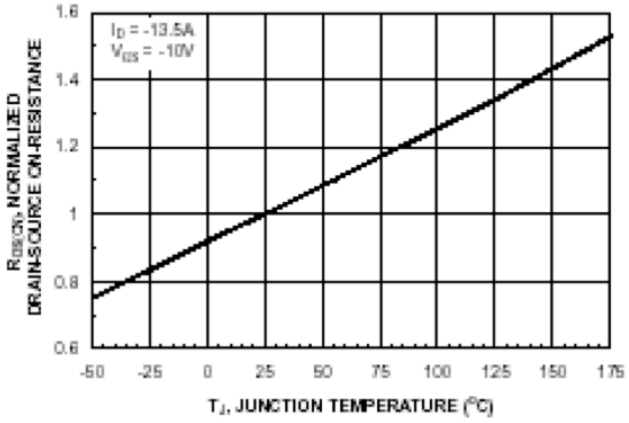

Figure 5. Transfer Characteristics

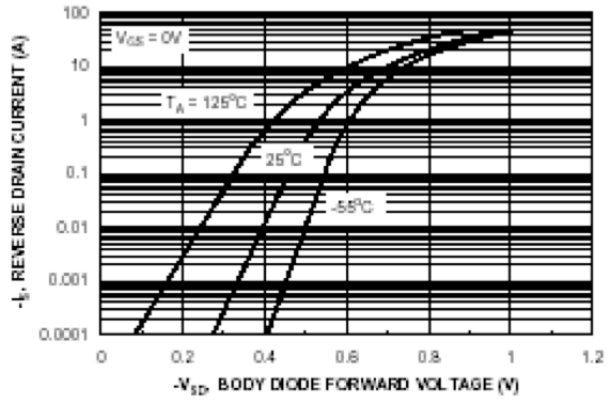

Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

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- **Characteristic Curves**

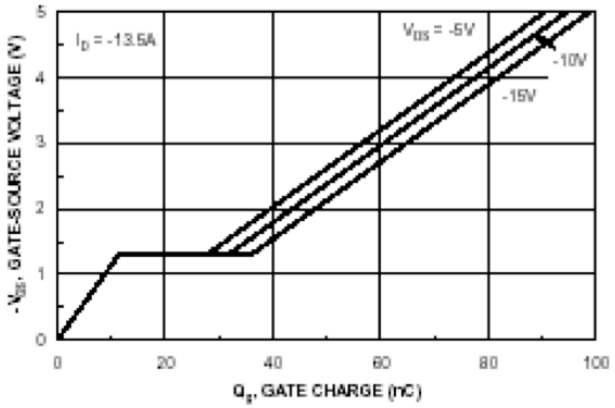


Figure 7. Gate Charge Characteristics

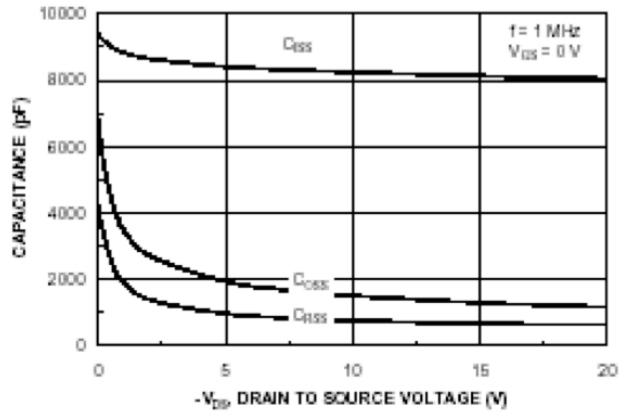


Figure 8. Capacitance Characteristics

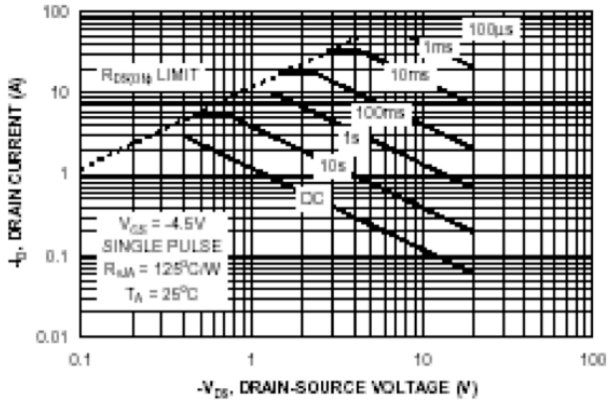


Figure 9. Maximum Safe Operating Area

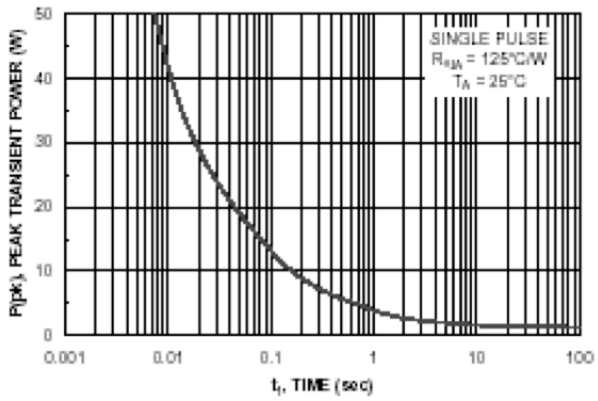
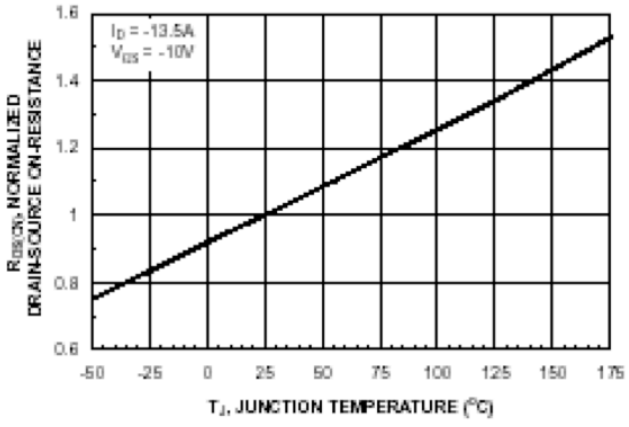


Figure 10. Single Pulse Maximum Power Dissipation



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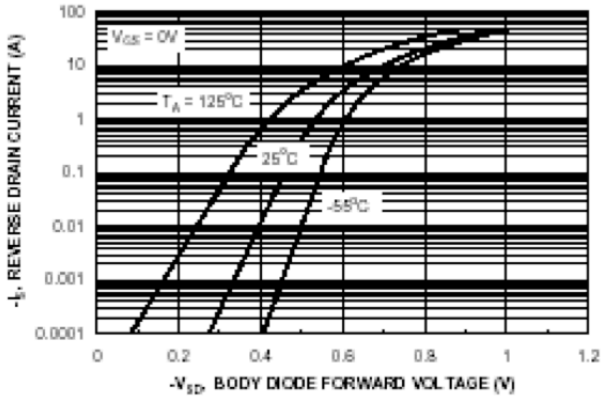

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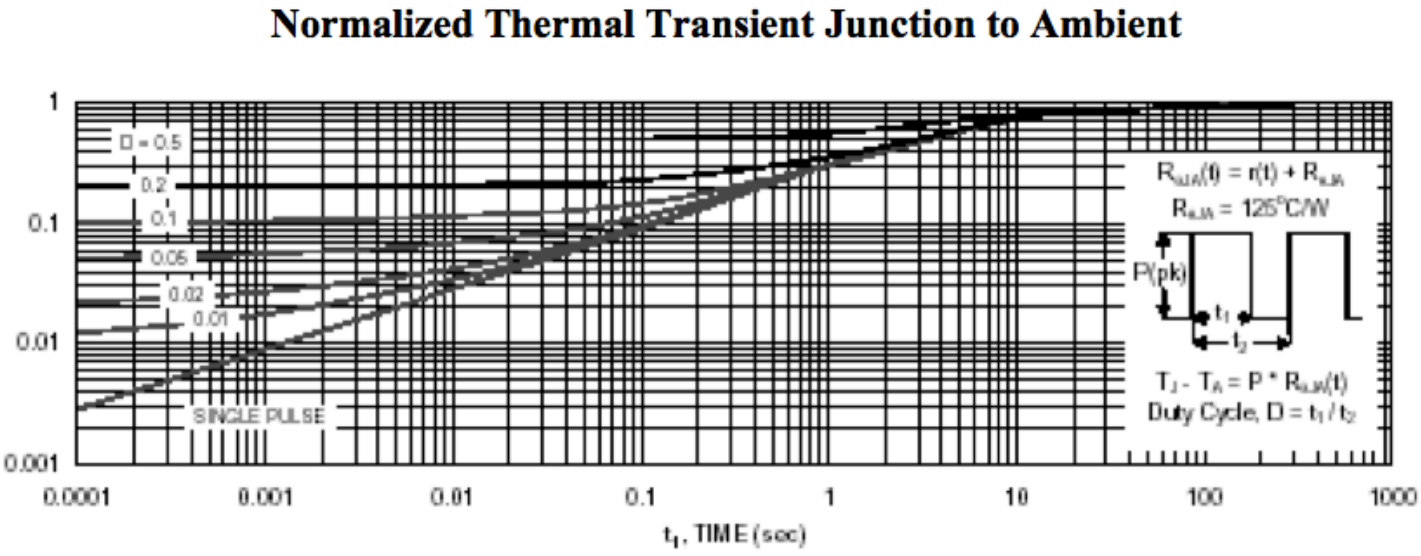

Figure 11. Transient Thermal Response Curve