



## 30V Dual P-Channel MOSFETs

### General Description

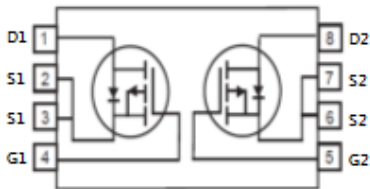
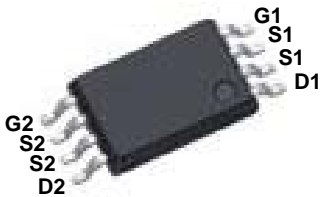
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

$BV_{DSS}$	$R_{DS(ON)}$	$I_D$
-30 V	16 m $\Omega$	-10 A

### Features

- -30V, -10A,  $R_{DS(ON)}=16m\Omega @V_{GS}=-10V$
- Fast switching
- Suit for -4.5V Gate Drive Applications
- Green Device Available

TSSOP-8 Pin Configuration



### Applications

- MB / VGA / Vcore
- POL Applications
- Load Switch
- LED Application

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current - Continuous ( $T_C=25^\circ\text{C}$ )	-10	A
	Drain Current - Continuous ( $T_C=100^\circ\text{C}$ )	-6.3	A
$I_{DM}$	Drain Current - Pulsed	-40	A
$P_D$	Power Dissipation	1.25	W
$T_J$	Operating Junction Temperature Range	-50 to 150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
Marking Code		PC016 / DEW3187	

### Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	100	$^\circ\text{C/W}$



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Electrical Characteristics (T<sub>J</sub>=25°C, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0V , I <sub>D</sub> = -250uA	-30	---	---	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> = -30V , V <sub>GS</sub> = 0V , T <sub>J</sub> =25°C	---	---	-1	uA
		V <sub>DS</sub> = -24V , V <sub>GS</sub> = 0V , T <sub>J</sub> =125°C	---	---	-10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> = ±20V , V <sub>DS</sub> = 0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> = -10V , I <sub>D</sub> = -8A	---	12	16	mΩ
		V <sub>GS</sub> = -4.5V , I <sub>D</sub> = -6A	---	18	26	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> = -250uA	-1.2	-1.6	-2.5	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> = -10V , I <sub>D</sub> = -8A	---	-10.5	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -15V , V <sub>GS</sub> = -4.5V , I <sub>D</sub> = -8A	---	14.6	21	nC
Q <sub>gs</sub>	Gate-Source Charge		---	4.1	6	
Q <sub>gd</sub>	Gate-Drain Charge		---	6.3	9	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> = -15V , V <sub>GS</sub> = -10V , R <sub>G</sub> = 6Ω , I <sub>D</sub> = -1A	---	9	17	nS
T <sub>r</sub>	Rise Time		---	21.8	41	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	59.8	114	
T <sub>f</sub>	Fall Time		---	14.4	27	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -15V , V <sub>GS</sub> = 0V , F= 1MHz	---	1730	2510	pF
C <sub>oss</sub>	Output Capacitance		---	180	260	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	125	180	

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> = 0V , I <sub>S</sub> = -1A	---	---	-1	V



Characteristics Curves

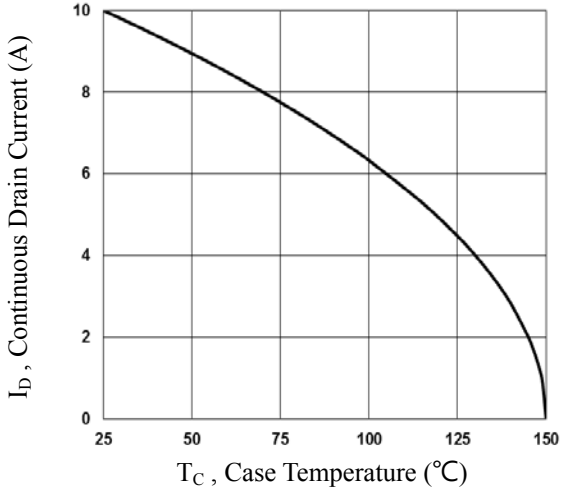


Fig.1 Continuous Drain Current vs.  $T_c$

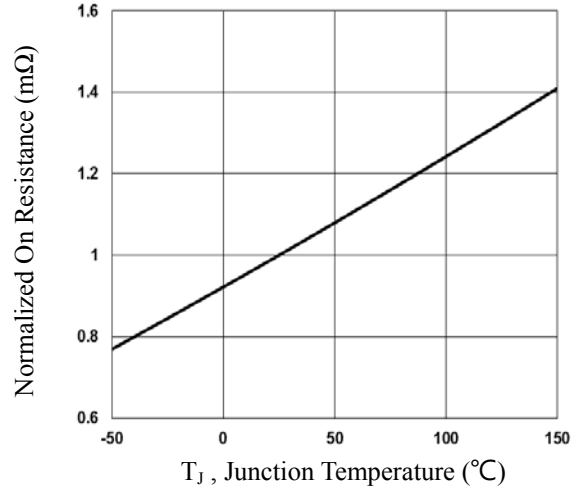


Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_j$

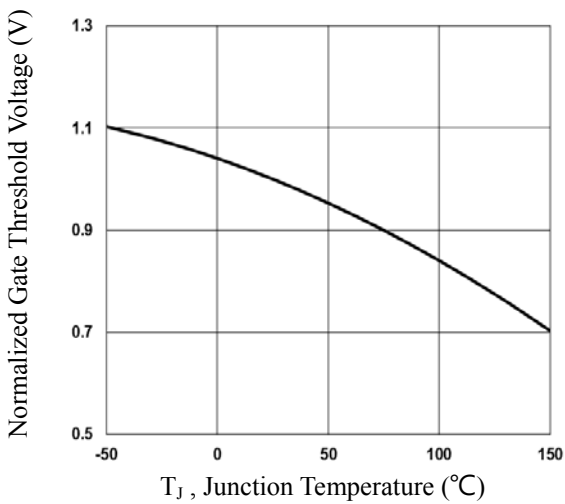


Fig.3 Normalized  $V_{th}$  vs.  $T_j$

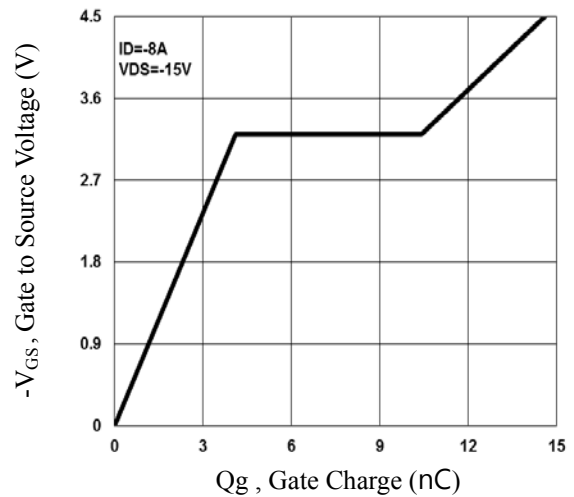


Fig.4 Gate Charge Waveform

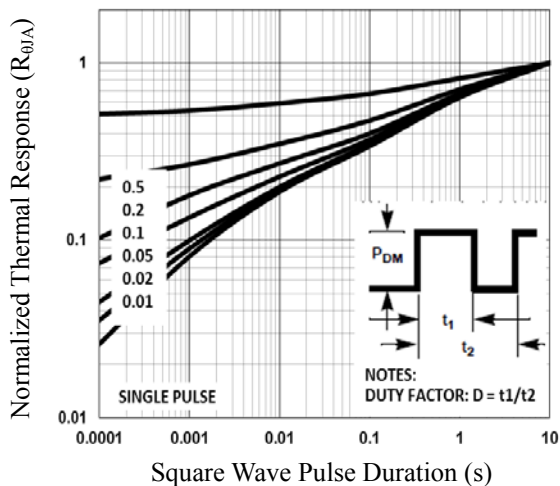


Fig.5 Normalized Transient Impedance

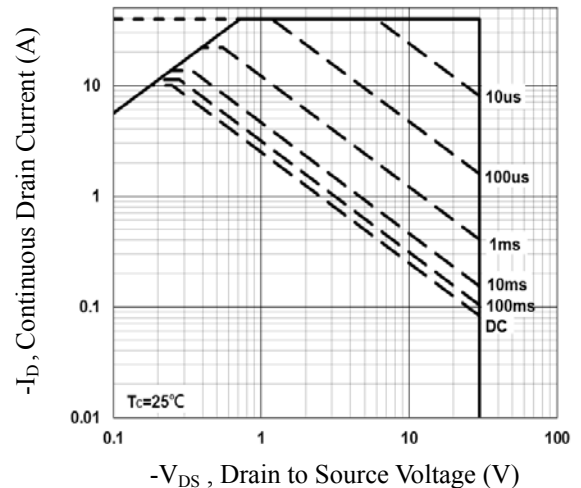


Fig.6 Maximum Safe Operation Area



Characteristics Curves

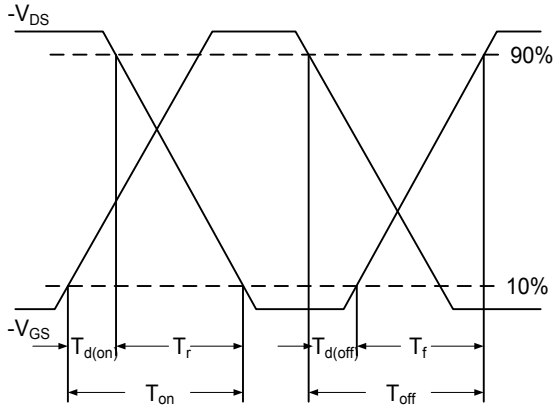


Fig.7 Switching Time Waveform

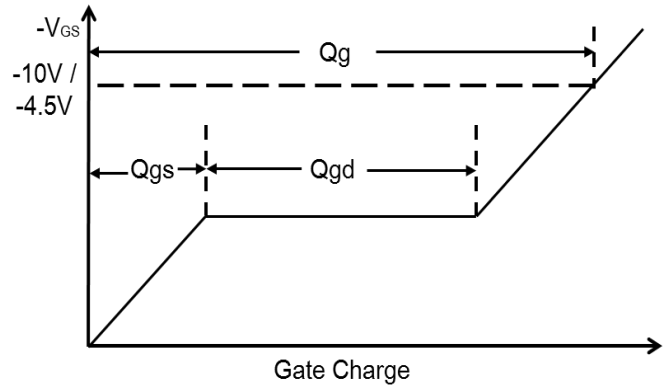
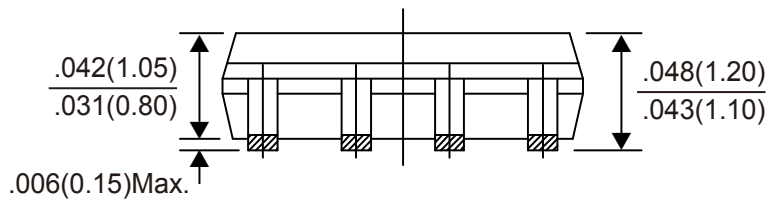
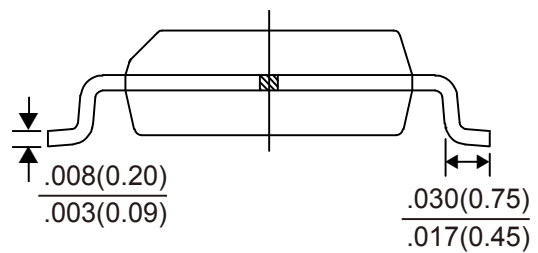
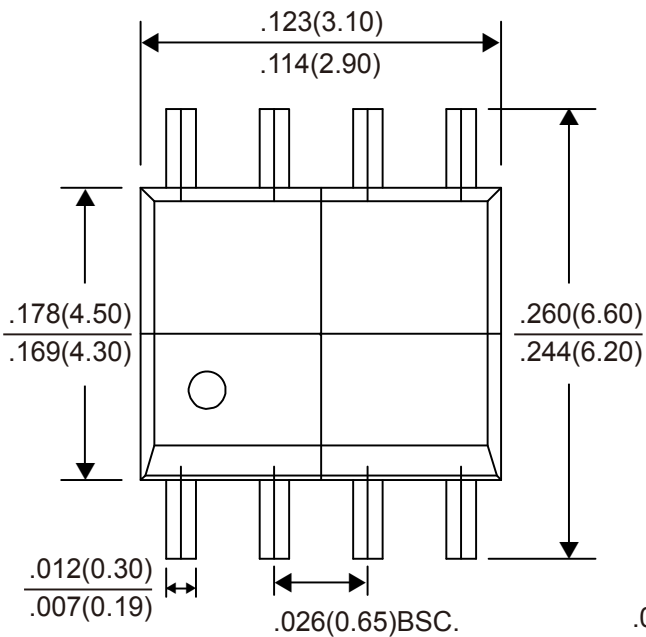


Fig.8 Gate Charge Waveform

Package Outline Dimensions



TSSOP-8

Dimensions in inches and (millimeters)



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