## Description：

This P-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.
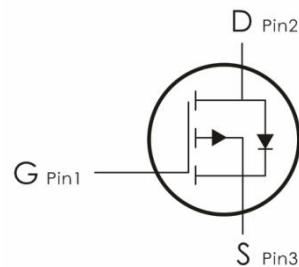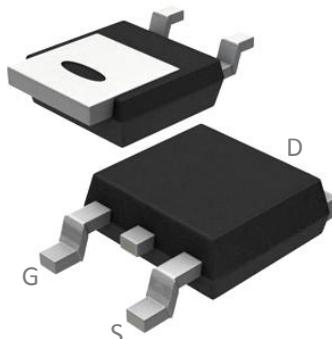
Features：

1) V_{DS}=-30V,I_D=-50A,$R_{DS(ON)}$<10mΩ @V_{GS}=-10V

2) Low gate charge.

3) Green device available.

4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.

5) Excellent package for good heat dissipation.

Absolute Maximum Ratings： (T$_C$=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	$\pm$25	V
I_D	Continuous Drain Current-T$_C$=25℃	-50	A
	Continuous Drain Current-T$_C$=100℃	-38	
$I_{DM (pluse)}$	Drain Current – Pulsed(Note 1)	-220	A
P_D	Power Dissipation-T$_C$=25℃	75	W
	Power Dissipation-T$_C$=100℃	37.5	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	2	℃/W

Package Marking and Ordering Information：

Part NO.	Marking	Package
DOD50P03	50P03	TO-252

Electrical Characteristics： (T$_C$=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV$_{DSS}$	Drain-Sourtce Breakdown Voltage	V$_{GS}$=0V,I$_D$=250μA	-30	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{GS}$=0V, V$_{DS}$=-30V	---	---	1	μA
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±25V, V$_{DS}$=0A	---	---	±100	nA
On Characteristics						
V$_{GS(th)}$	GATE-Source Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$=250μA	-1	-1.6	-2.5	V
R$_{DS(ON)}$	Drain-Source On Resistance	V$_{GS}$=-10V,I$_D$=-20A	---	8.5	10	mΩ
		V$_{GS}$=-4.5V,I$_D$=-15A	---	13	21	
G$_{FS}$	Forward Transconductance	V$_{DS}$=-5V,I$_D$=-6A	10	22	---	S
Dynamic Characteristics						
C$_{iss}$	Input Capacitance	V$_{DS}$=-15V, V$_{GS}$=0V, f=1MHz	---	2350	---	pF
C$_{oss}$	Output Capacitance		---	380	---	
C$_{rss}$	Reverse Transfer Capacitance		---	285	---	
Switching Characteristics						
t$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=-15V, I$_D$=-1A, R$_L$=15Ω,R$_G$=2.5Ω, V$_{GS}$=-10V	---	11	---	ns
t$_r$	Rise Time		---	24	---	ns
t$_{d(off)}$	Turn-Off Delay Time		---	38	---	ns
t$_f$	Fall Time		---	10	---	ns
Q$_g$	Total Gate Charge	V$_{DS}$=-15V, V$_{GS}$=-10V, I$_D$=-12A	---	40	---	nC
Q$_{gs}$	Gate-Source Charge		---	7.5	---	nC
Q$_{gd}$	Gate-Drain Charge		---	10	---	nC
Drain-Source Diode Characteristics						
V$_{SD}$	Source-Drain Diode Forward Voltage	V$_{GS}$=0V,I$_S$=-6A	---	---	-1.2	V

| I_{SD} | Continuous Source Current | --- | --- | --- | -55 | A |

Notes: 1.Repetitive Rating: Pulse width limited by maximum junction temperature

Typical Characteristics： (T$_C$=25℃ unless otherwise noted)

Figure1. Power Dissipation
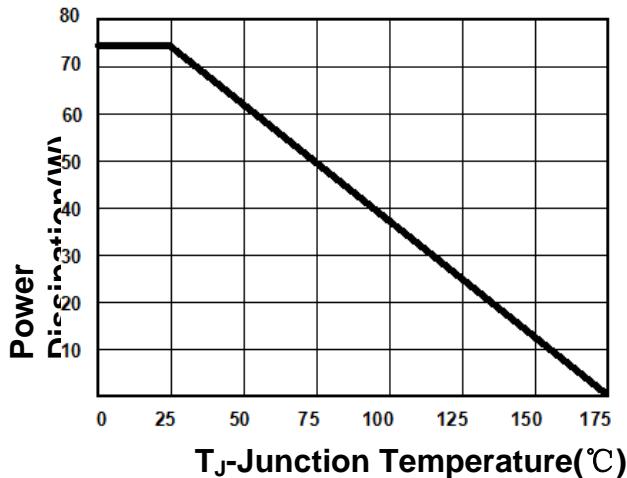

Figure2. Drain Current
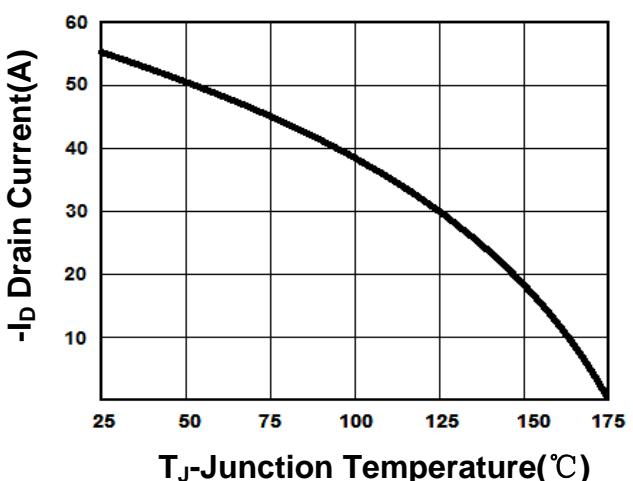
Figure3. Output Characteristics
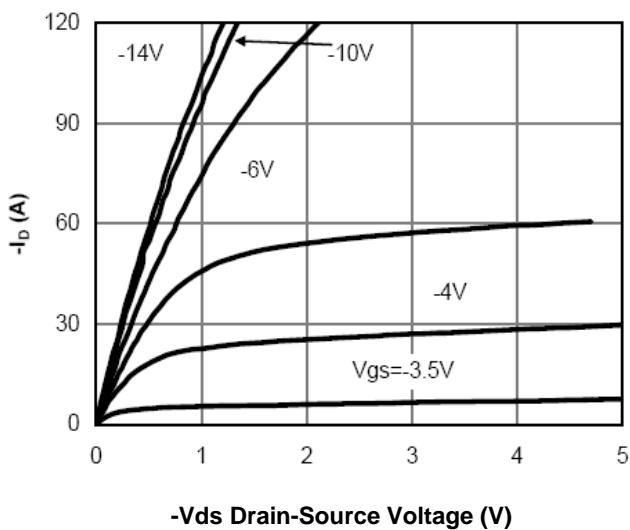

Figure4. Transfer Characteristics
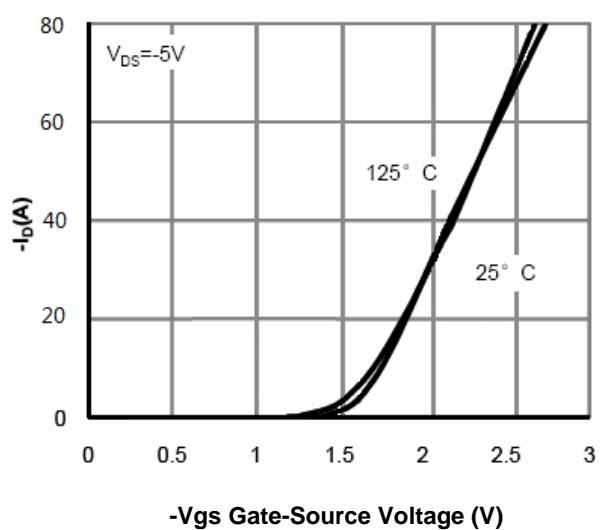
Figure5. Capacitance
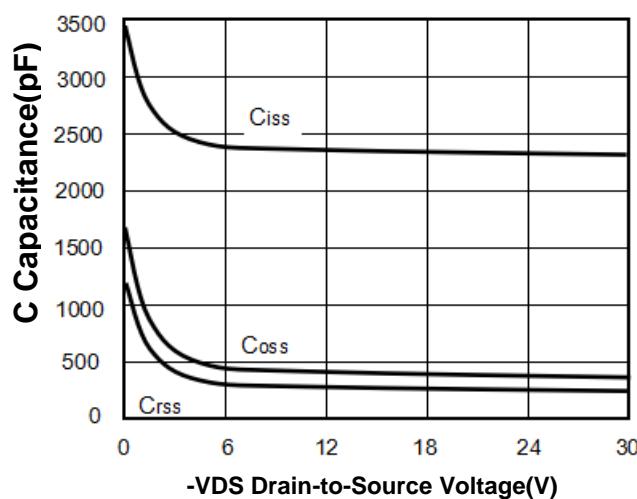
Figure6. R_{DS(ON)} vs Junction Temperature

Figure6. $R_{DS(ON)}$ vs Junction Temperature

Figure7. Max BV_{DSS} vs Junction Temperature

Figure7. Max BV_{DSS} vs Junction Temperature
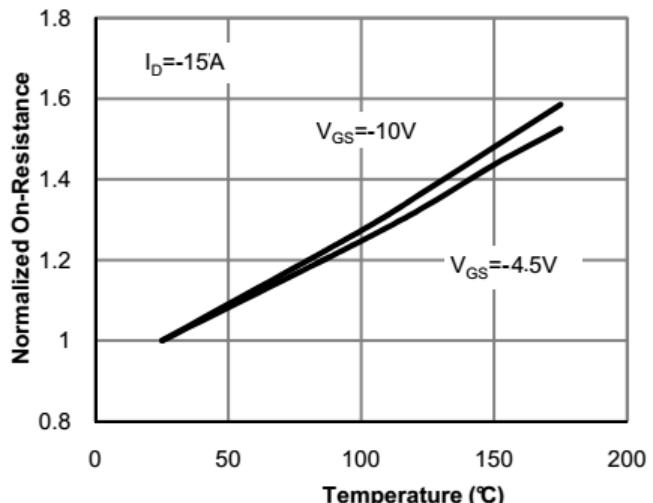
## Figure8. V_{GS(th)} vs Junction Temperature
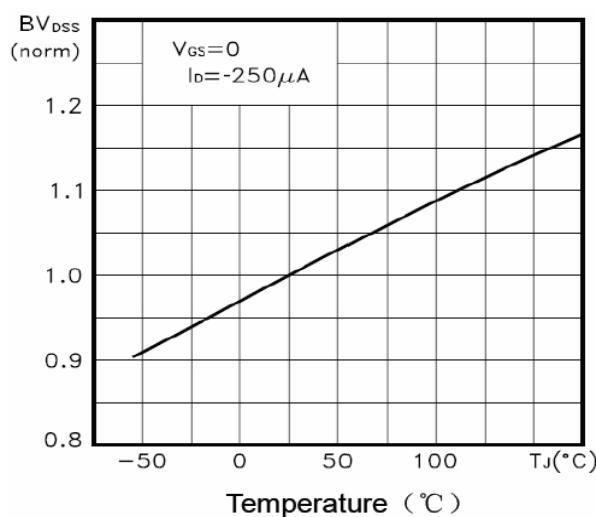
Figure8. $V_{GS(th)}$ vs Junction Temperature
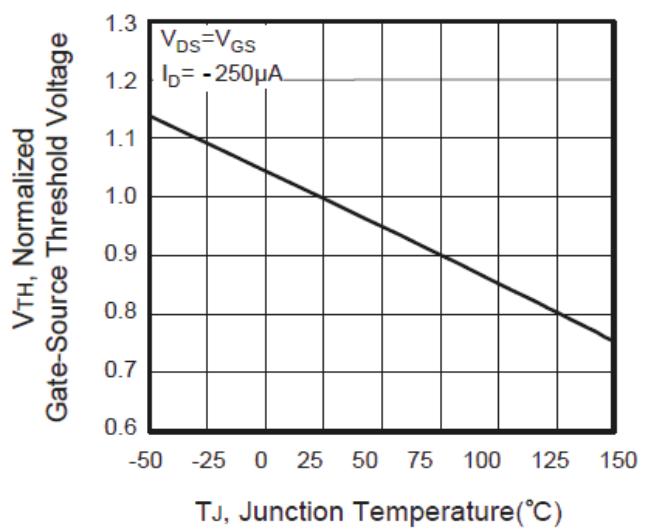
## Figure9. Gate Charge Waveforms
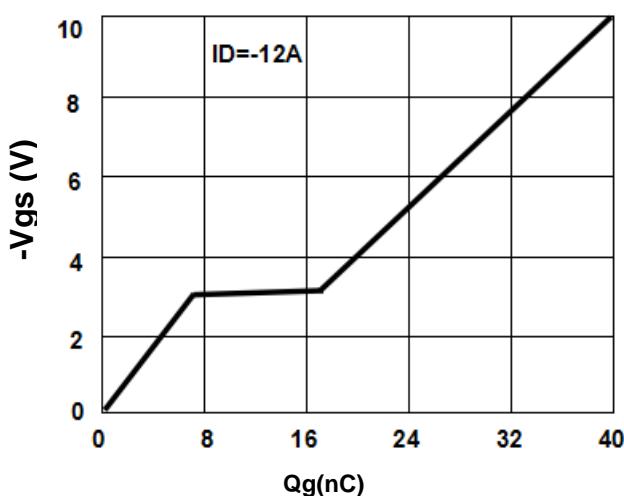
Figure10. Maximum Safe Operating Area
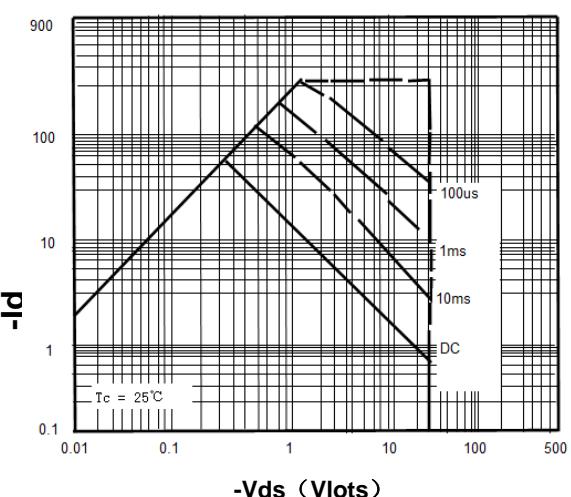
Figure11. Normalized Maximum Transient Thermal Impedance