★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology
★ 100% EAS Guaranteed

Product Summary

RoHS

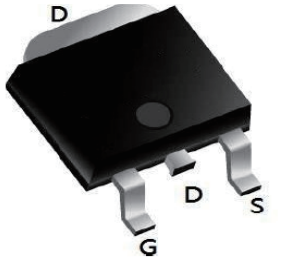
BVDSS	RDSON	ID
-30V	6mΩ	-80A

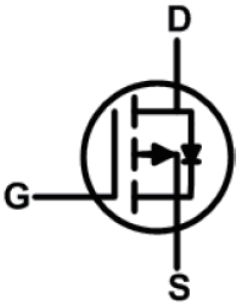
Description

The 80P03 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The 80P03 meet the RoHS and Green Product requirement，100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_{DS}	Drain-to-Source Voltage		-30	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	-80	A
		T_C = 100°C	-42	
I_{DM}	Pulsed Drain Current (1)		-175	A
E_{AS}	Single Pulsed Avalanche Energy (2)		31	mJ
P_D	Power Dissipation	T_C = 25°C	31.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(3)		43	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		4	
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C
I_{AS}	Avalanche Current		-25	A

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter		Test condition	Min.	Typ.	Max.	Units
Static Characteristics							
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		V_{GS} = 0V, I_D = 250μA	-30	-	-	V
I_{GSS}	Gate-body Leakage current		V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	T_J=25°C	V_{DS} = 85V, V_{GS} = 0V	-	-	-1	μA
		T_J=55°C		-	-	-5	μA
$V_{GS(th)}$	Gate-Threshold Voltage		V_{DS} = V_{GS}, I_D = 250μA	-1	-1.6	-2.5	V
$R_{DS(on)}$	Drain-Source on-Resistance[2]		V_{GS} = -10V, I_D =-12A	-	6	8.8	mΩ
			V_{GS} = -4.5V, I_D =-8A	-	9	14	
g_{fs}	Forward Transconductance[4]		V_{DS} = -5V, I_D =-20A	-	28	-	S
Dynamic Characteristics[5]							
C_{iss}	Input Capacitance		V_{DS} = -15V, V_{GS} =0V, f =1MHz	-	4320	-	pF
C_{oss}	Output Capacitance			-	529	-	pF
C_{rss}	Reverse Transfer Capacitance			-	487	-	pF
Switching Characteristics[5]							
R_g	Gate Resistance		f=1MHz	-	4	-	Ω
Q_g	Total Gate Charge		V_{GS} = -10V, V_{DS} = -15V, I_D= -15A	-	45	-	nC
Q_{gs}	Gate-Source Charge			-	8.5	-	nC
Q_{gd}	Gate-Drain Charge			-	12.8	-	nC
$t_{d(on)}$	Turn-on Delay Time		V_{GS} =-10V, V_{DD} =-15V, R_G = 2.5Ω, I_D= -15A	-	16.5	-	ns
t_r	Rise Time			-	51.8	-	ns
$t_{d(off)}$	Turn-off Delay Time			-	37.1	-	ns
t_f	Fall Time			-	8.2	-	ns
t_{rr}	Body Diode Reverse Recovery Time		I_F=20A, di/dt = 100A/μS	-	69	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge			-	141	-	nC
Drain-Source Body Diode Characteristics							
V_{SD}	Diode Forward Voltage[2]		I_S =-1A, V_{GS} = 0V	-	-	-1	V
I_S	Continuous Source Current		V_G=V_D=0V , Force Current	-	-	-80	A

Notes:
1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
3.The EAS data shows Max. rating . The test condition is VDD= -25V, V_{GS}= -10V, L= 0.1mH, IAS= -25A
4.The power dissipation is limited by 150°C junction temperature
5.The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Performance Characteristics

Figure1: Output Characteristics

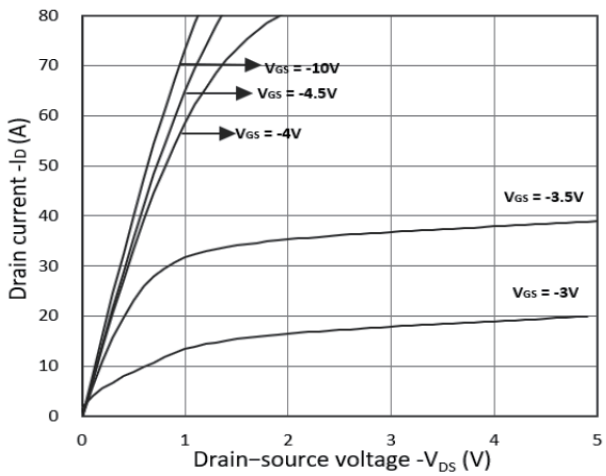


Figure 2: Transfer Characteristics

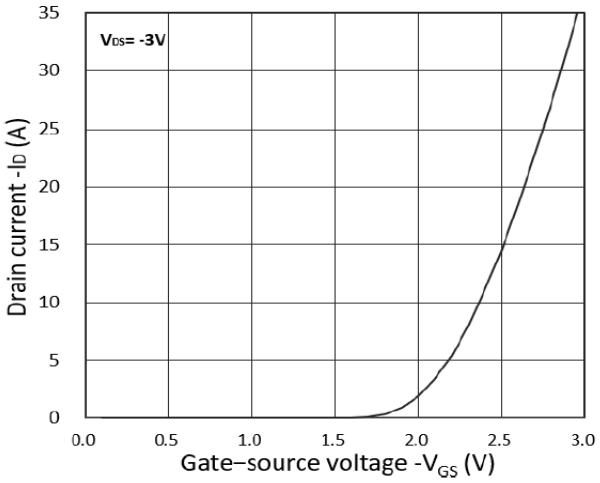


Figure 3: Forward Characteristics of Reve

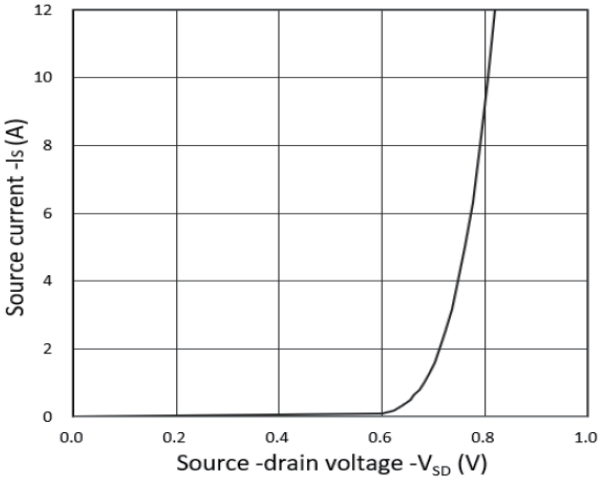


Figure 4:Gate Charge Characteristics

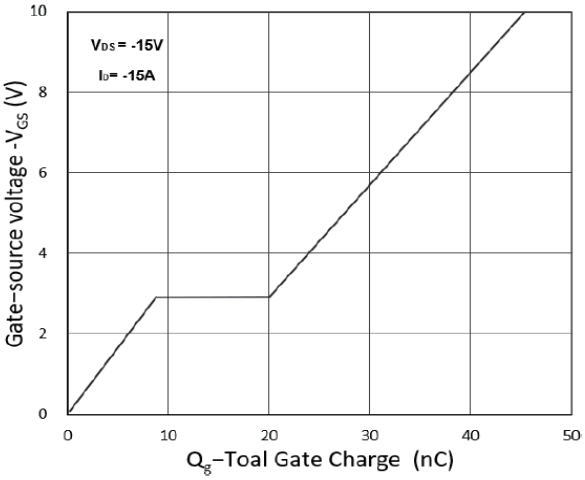


Figure 5: RDS(on) vs. VGS

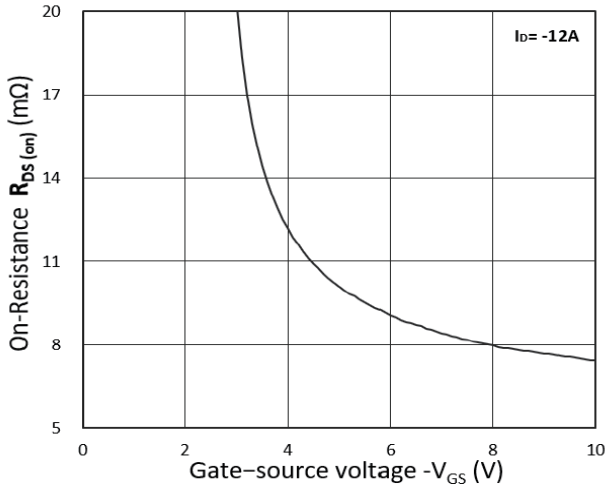
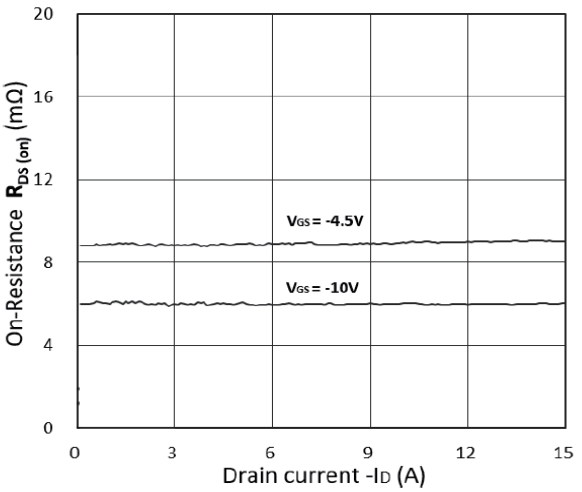


Figure 6:RDS(on) vs. ID



Typical Performance Characteristics

Figure 7: Capacitance Characteristics

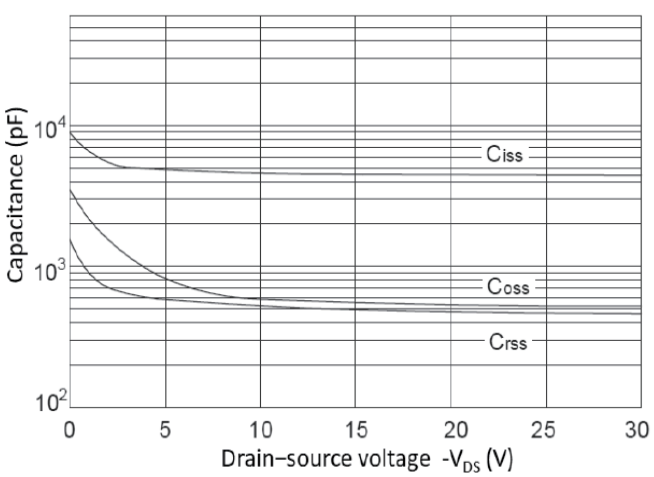


Figure 8:Safe Operating Area

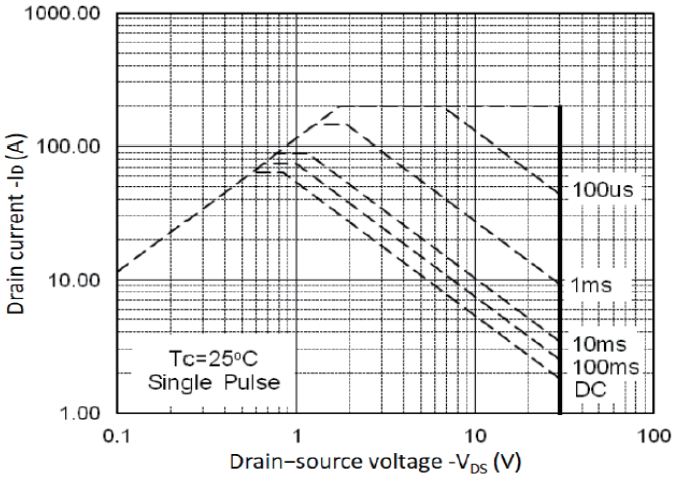


Figure 9: Normalized Maximum Transient

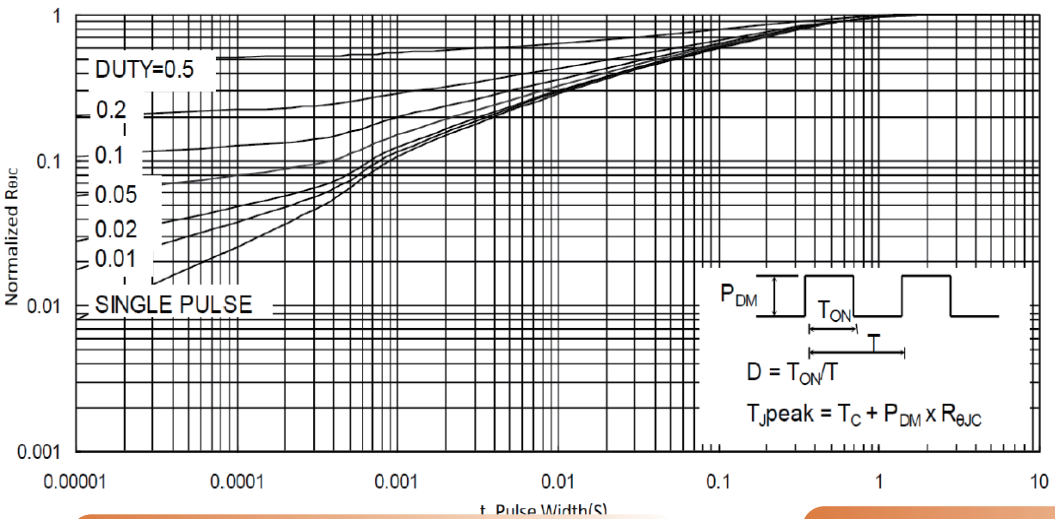


Figure 10: Switching Time Waveform

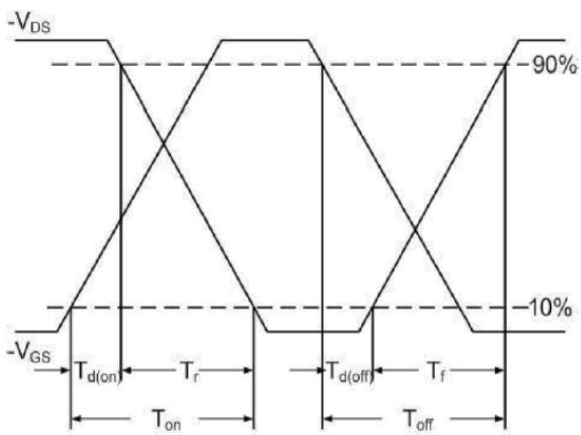
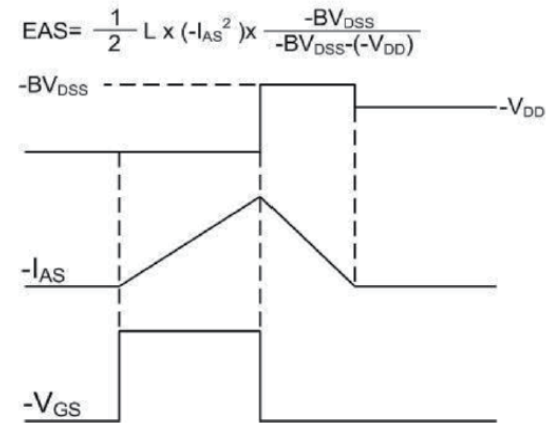
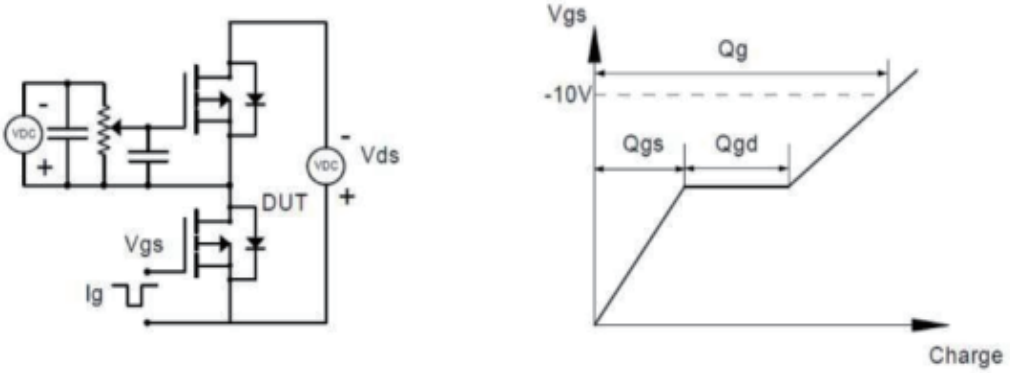


Figure 11:Unclamped Inductive Switching

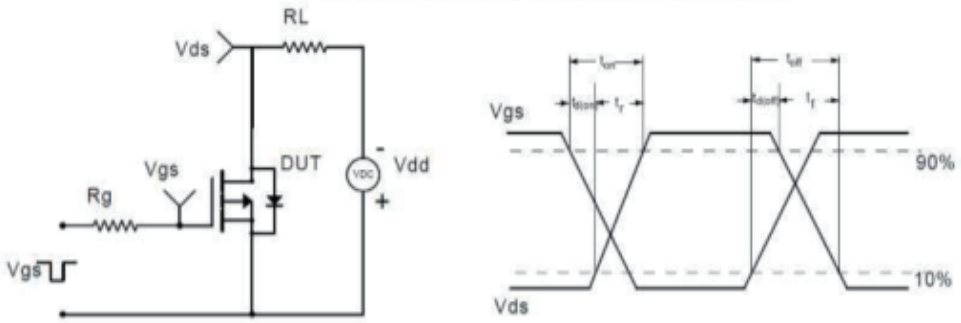


Test Circuit

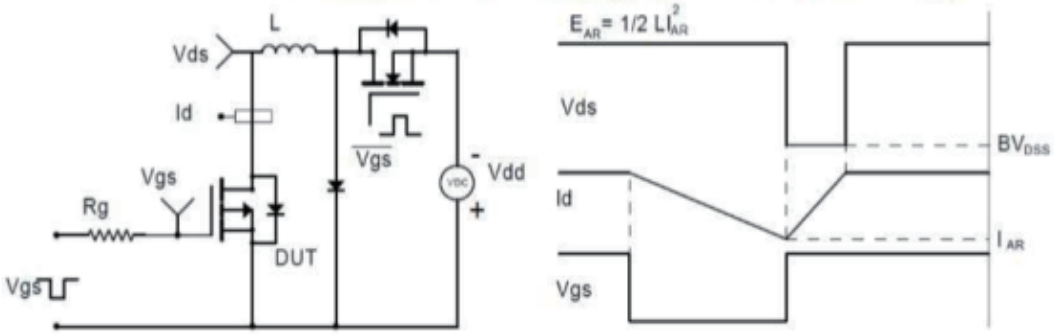
Gate Charge Test Circuit & Waveform



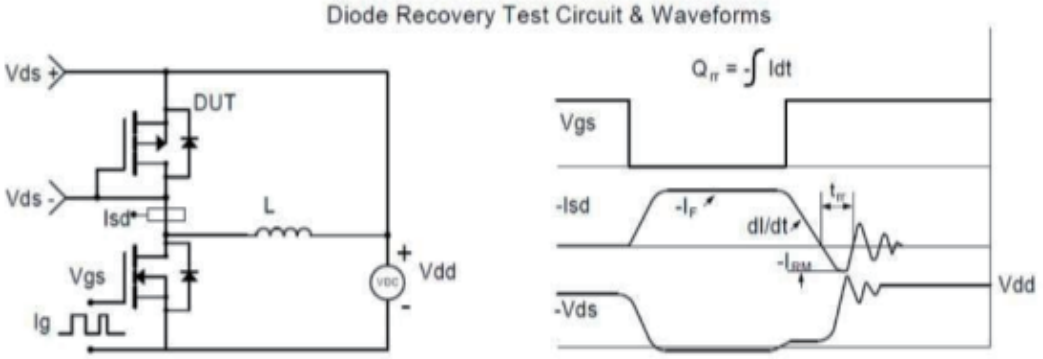
Resistive Switching Test Circuit & Waveforms



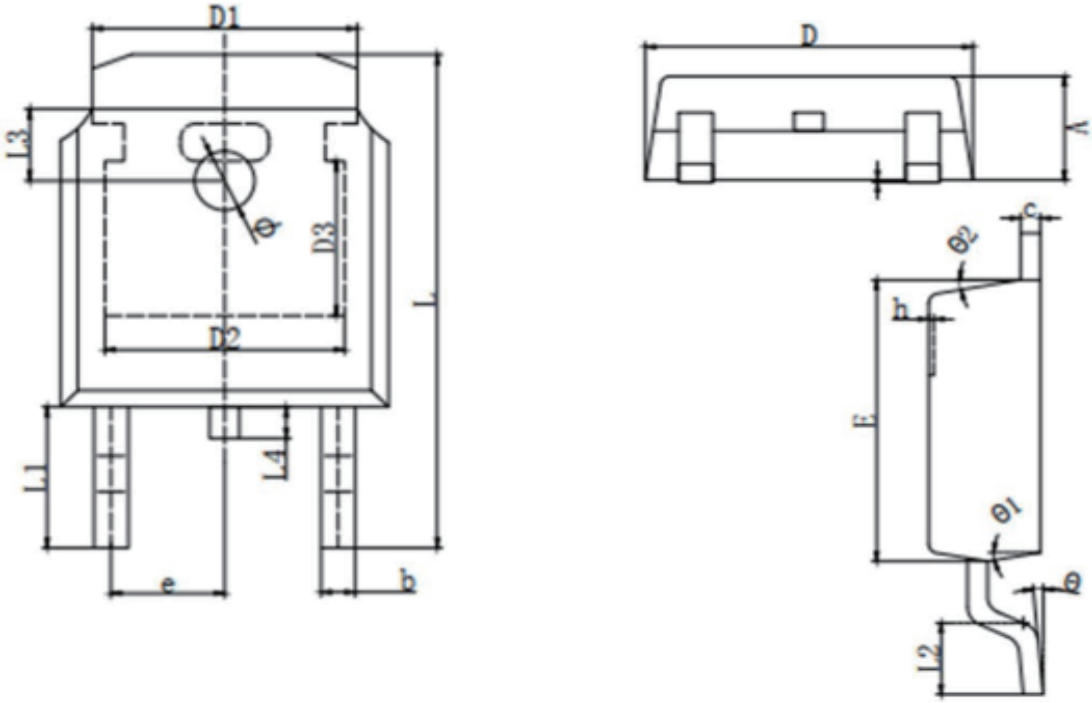
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



TO-252 Package outline



SYMBOL	MILLIMETER		SYMBOL	MILLIMETER	
	MIN	MAX		MIN	MAX
A	2.200	2.400	h	0.000	0.200
A1	0.000	0.127	L	9.900	10.30
b	0.640	0.740	L1	2.888 REF	
c	0.460	0.580	L2	1.400	1.700
D	6.500	6.700	L3	1.600 REF	
D1	5.334 REF		L4	0.600	1.000
D2	4.826 REF		ϕ	1.100	1.300
D3	3.166 REF		θ	0°	8°
E	6.000	6.200	θ1	9° TYP2	
e	2.286 TYP		θ2	9° TYP	