

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

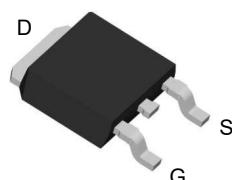
Product Summary



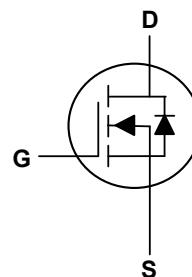
V_{DS}	120	V
I_D	60	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	12	mΩ

Applications

- High Frequency Point-of-Load,Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



TO-252 Top View



Absolute Maximum Ratings($T_c=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	60	A
Continuous Drain Current	$I_D @ T_c = 100^\circ C$	42.4	A
Pulsed Drain Current	I_{DM}	240	A
Single Pulse Avalanche Energy ³	EAS	290	mJ
Total Power Dissipation	P_D	105	W
Storage Temperature Range	T_{STG}	-55 to 175	°C
Operating Junction Temperature Range	T_J	-55 to 175	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	1.4	°C/W

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}$, $I_D=250\mu\text{A}$	120	---	---	V
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}$, $I_D=30\text{A}$	---	10	12	$\text{m}\Omega$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{GS}}=V_{\text{DS}}$, $I_D=250\mu\text{A}$	1.0	1.7	2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=120\text{V}$, $V_{\text{GS}}=0\text{V}$, $T_J=25^\circ\text{C}$	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}$, $V_{\text{DS}}=0\text{V}$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{\text{DS}}=5\text{V}$, $I_D=30\text{A}$	---	40	---	S
Total Gate Charge	Q_g	$V_{\text{DS}}=60\text{V}$, $V_{\text{GS}}=10\text{V}$, $I_D=30\text{A}$	---	37	---	nC
Gate-Source Charge	Q_{gs}		---	14	---	
Gate-Drain Charge	Q_{gd}		---	8	---	
Turn-On Delay Time	$T_{\text{d(on)}}$	$V_{\text{DD}}=50\text{V}$, $I_D=30\text{A}$, $V_{\text{GS}}=10\text{V}$, $R_G=3\Omega$	---	11	---	ns
Rise Time	T_r		---	7.5	---	
Turn-Off Delay Time	$T_{\text{d(off)}}$		---	26	---	
Fall Time	T_f		---	4	---	
Input Capacitance	C_{iss}	$V_{\text{DS}}=60\text{V}$, $V_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	2500	---	pF
Output Capacitance	C_{oss}		---	273	---	
Reverse Transfer Capacitance	C_{rss}		---	27	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ²	I_S		---	---	60	A
Diode Forward Voltage ¹	V_{SD}	$V_{\text{GS}}=0\text{V}$, $I_F=30\text{A}$, $T_J=25^\circ\text{C}$	---	---	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=I_S$, $dI/dt=100\text{A}/\mu\text{s}$, $T_J=25^\circ\text{C}$	---	58	---	nS
Reverse Recovery Charge	Q_{rr}		---	149	---	nC

Note:

- 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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- 3.ESD condition: $T_J=25^\circ\text{C}$, $V_{\text{DD}}=50\text{V}$, $V_{\text{GS}}=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$

Typical Characteristics

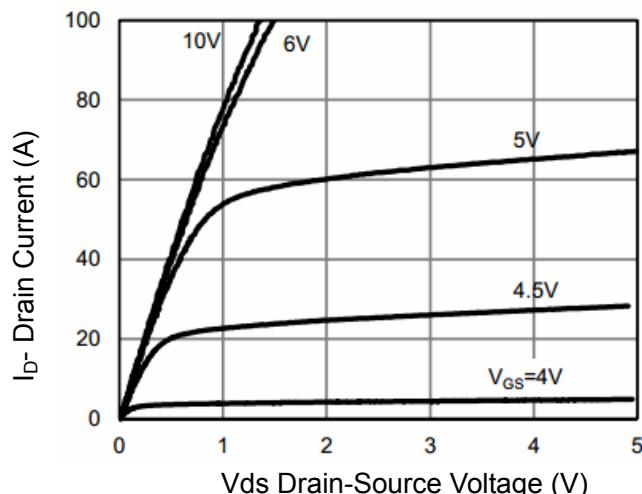


Figure 1 Output Characteristics

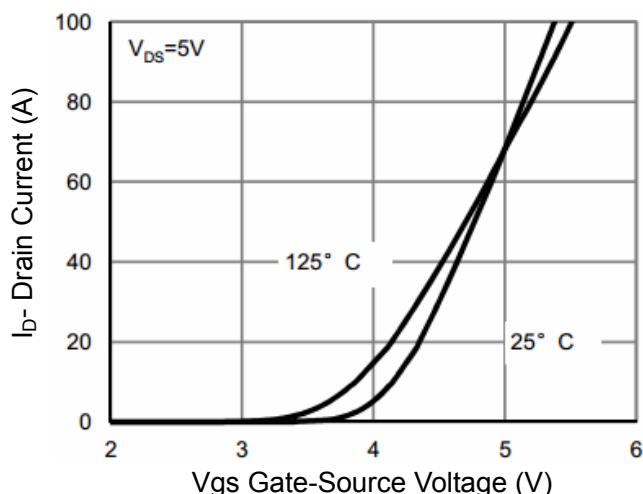


Figure 2 Transfer Characteristics

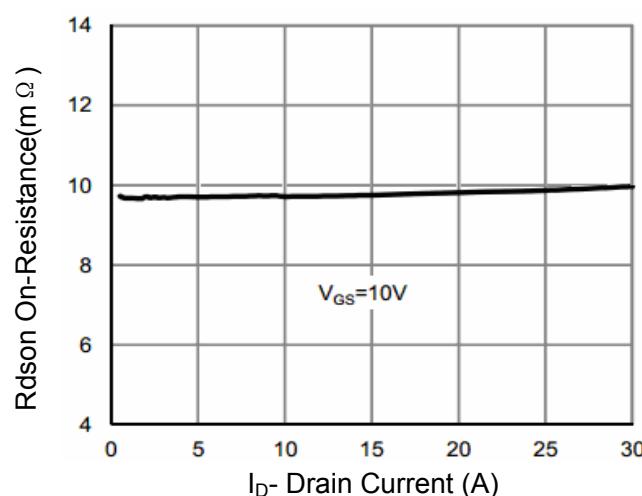


Figure 3 Rdson- Drain Current

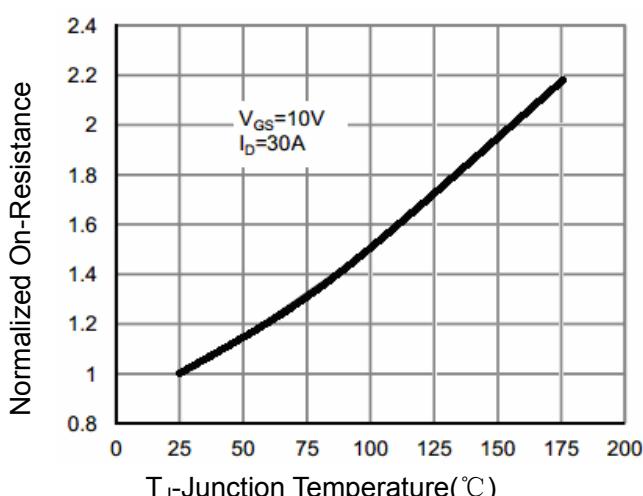


Figure 4 Rdson-JunctionTemperature

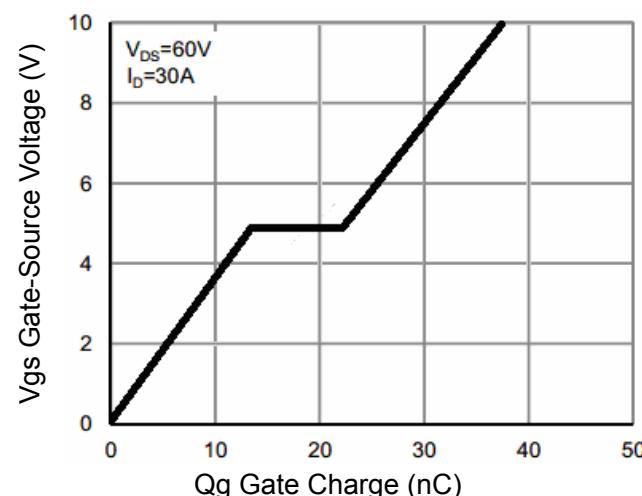


Figure 5 Gate Charge

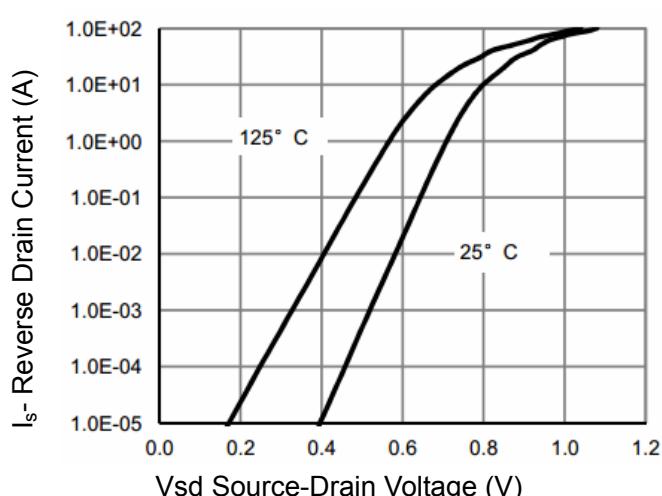
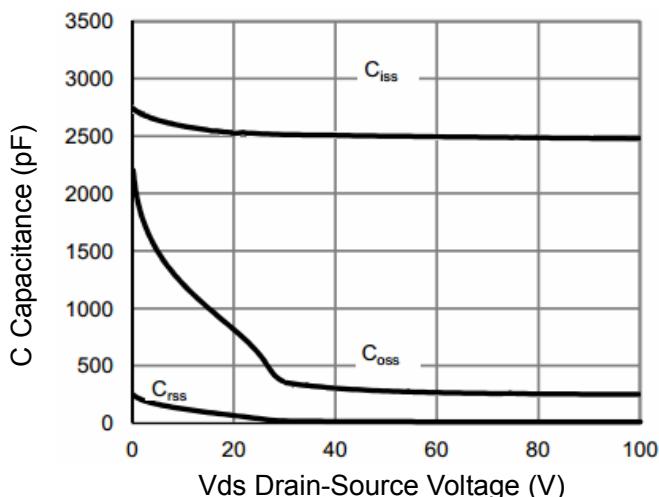
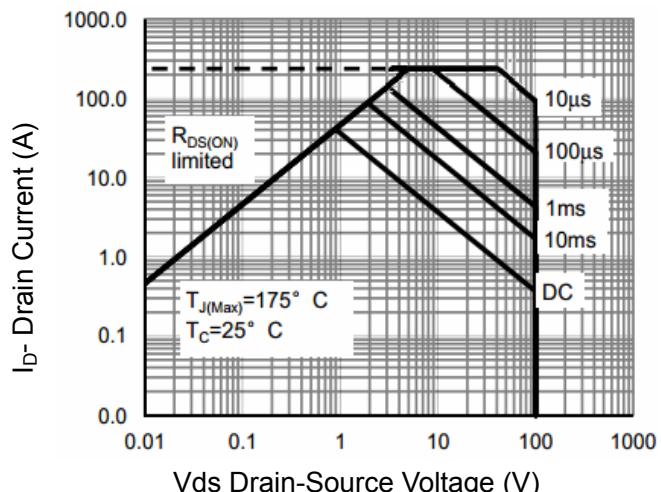
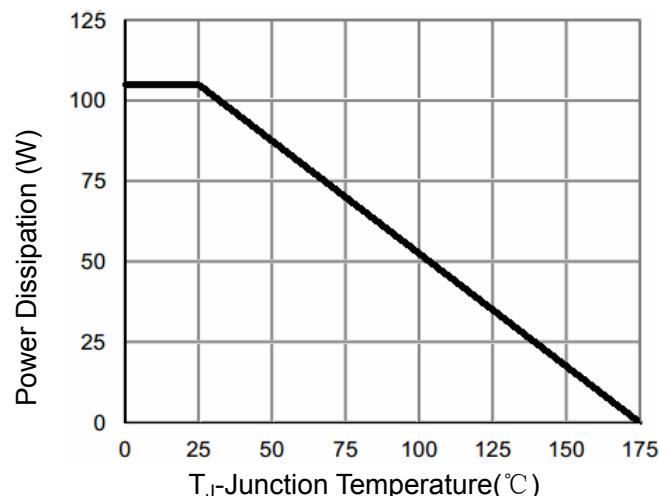
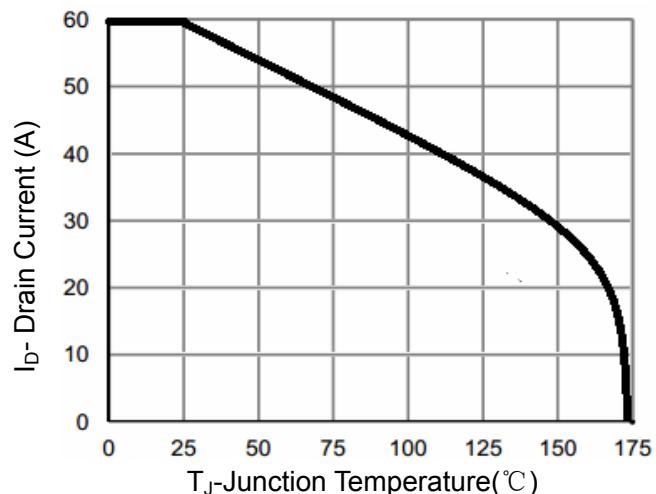
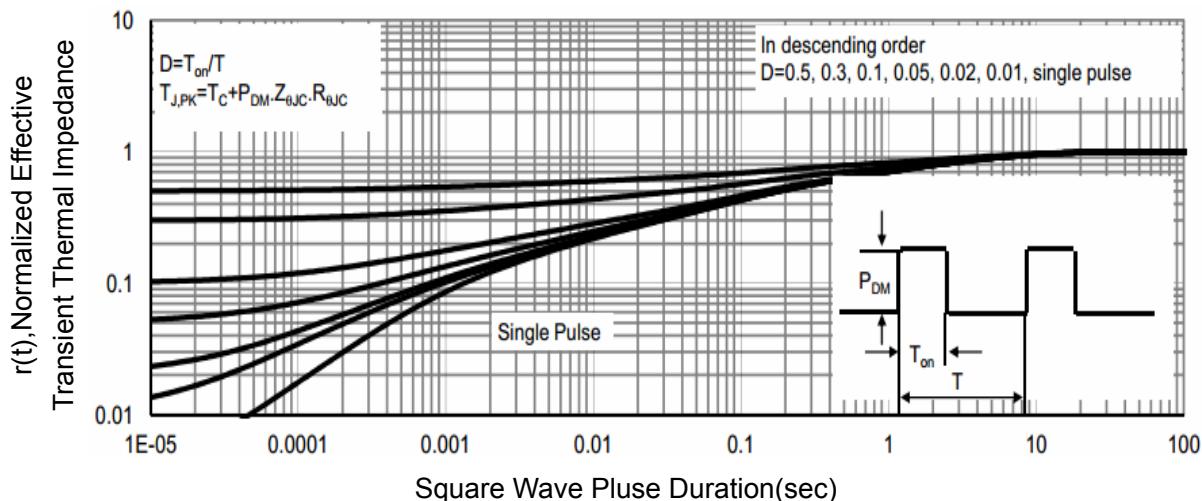
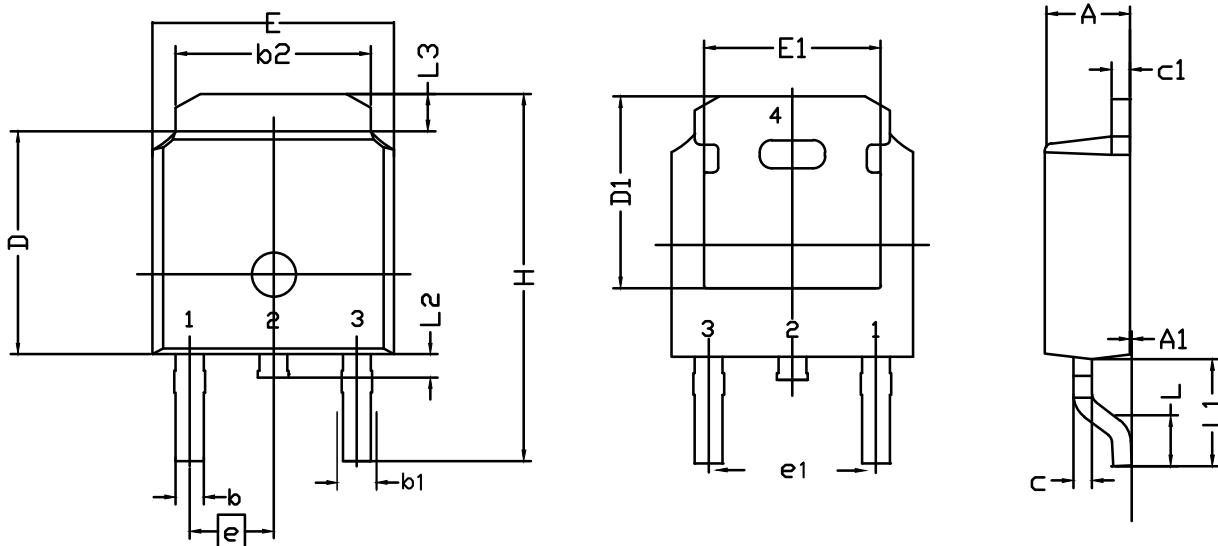


Figure 6 Source- Drain Diode Forward


Figure 7 Capacitance vs Vds

Figure 8 Safe Operation Area

Figure 9 Power De-rating

Figure 10 Current De-rating

Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	2.20	2.30	2.38	E	6.40	6.60	6.731
A₁	0.00	0.10	0.20	E₁	4.40	--	--
b	0.64	0.76	0.89	e	2.286 BSC		
b₁	0.77	0.85	1.14	e₁	4.572 BSC		
b₂	5.00	5.33	5.46	H	9.40	10.00	10.40
c	0.458	0.508	0.610	L	1.40	1.52	1.77
C₁	0.458	0.508	0.620	L₁	--	2.743	--
D	5.98	6.10	6.223	L₂	0.60	0.80	1.01
D₁	5.20	5.25	5.38	L₃	0.90	1.06	1.25