

## Features

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

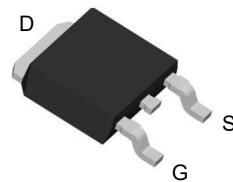
## Applications

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

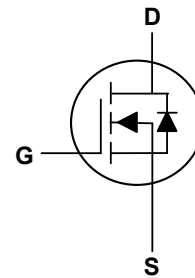
## Product Summary



$V_{DS}$	200	V
$I_D$	4.5	A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	700	m $\Omega$



TO-252 Top View



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	200	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	V
Continuous Drain Current <sup>1</sup>	$I_D@T_C=25^\circ\text{C}$	4.5	A
Continuous Drain Current <sup>1</sup>	$I_D@T_C=100^\circ\text{C}$	2.8	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	9	A
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	20	mJ
Total Power Dissipation <sup>4</sup>	$P_D$	36	W
Storage Temperature Range	$T_{STG}$	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to 150	$^\circ\text{C}$

## Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	---	50	$^\circ\text{C/W}$
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	---	3.5	$^\circ\text{C/W}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	200	---	---	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =2.9A	---	600	700	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	2.0	---	4.0	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V	---	---	±100	nA
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> =160V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A	---	6.5	---	nC
Gate-Source Charge	Q <sub>gs</sub>		---	1.3	---	
Gate-Drain Charge	Q <sub>gd</sub>		---	3.2	---	
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =100V, V <sub>GS</sub> =10V, R <sub>G</sub> =25Ω, I <sub>D</sub> =4A	---	9	---	ns
Rise Time	T <sub>r</sub>		---	16	---	
Turn-Off Delay Time	T <sub>d(off)</sub>		---	15	---	
Fall Time	T <sub>f</sub>		---	13	---	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	---	230	---	pF
Output Capacitance	C <sub>oss</sub>		---	25	---	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	9	---	

**Drain-Source Diode Characteristics**

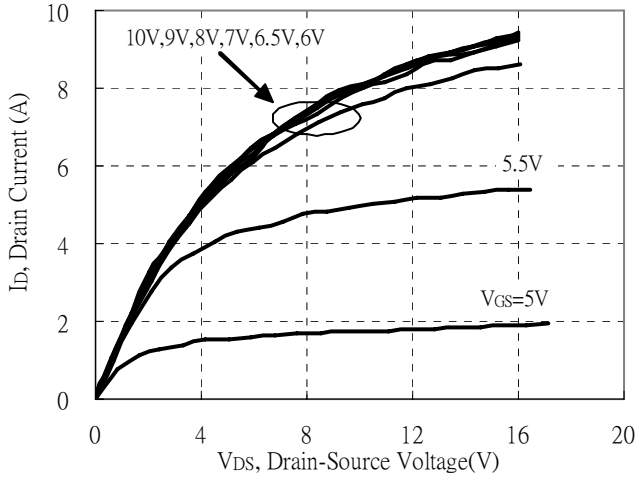
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage <sup>2</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	0.7	1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =2A, V <sub>R</sub> =0V di/dt=100A/μs, T <sub>J</sub> =25°C	---	120	---	nS
Reverse Recovery Charge	Q <sub>rr</sub>		---	500	---	nC

**Note:**

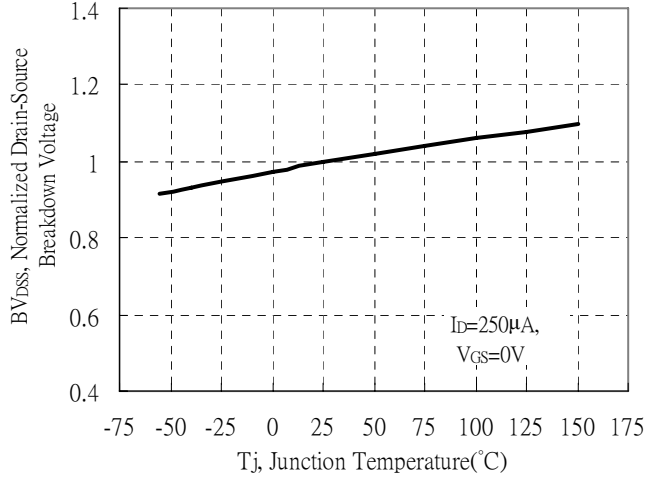
- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=50V, I<sub>D</sub>=2A, L=10mH
- 4.The power dissipation is limited by 150°C junction temperature

**Typical Characteristics**

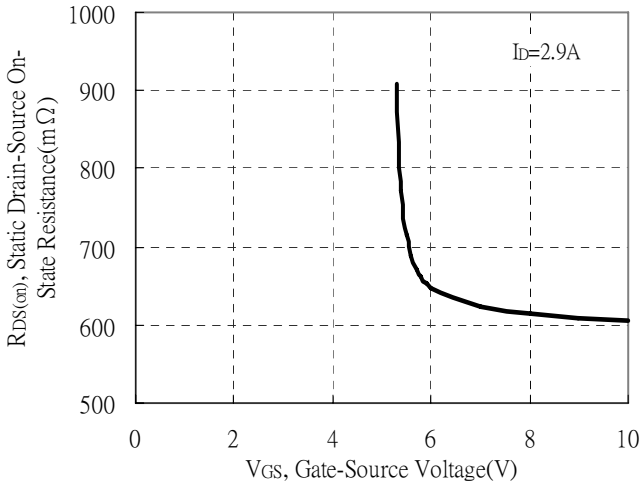
Typical Output Characteristics



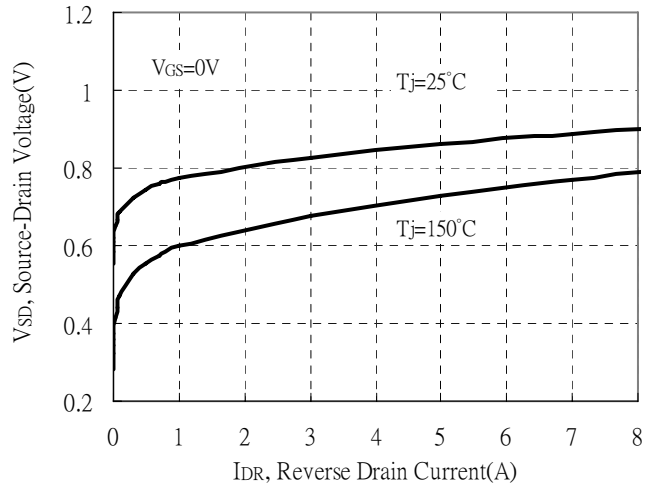
Brekdown Voltage vs Ambient Temperature



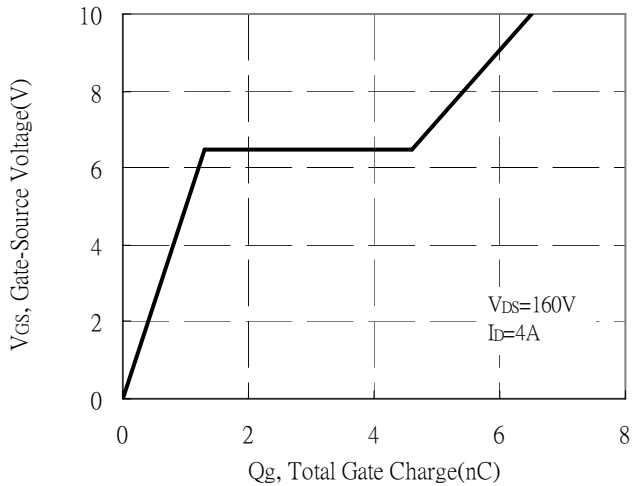
Static Drain-Source On-State Resistance vs Gate-Source Voltage



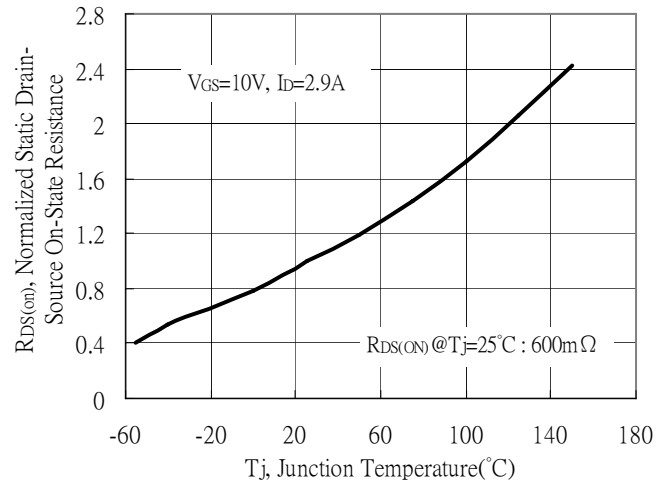
Reverse Drain Current vs Source-Drain Voltage



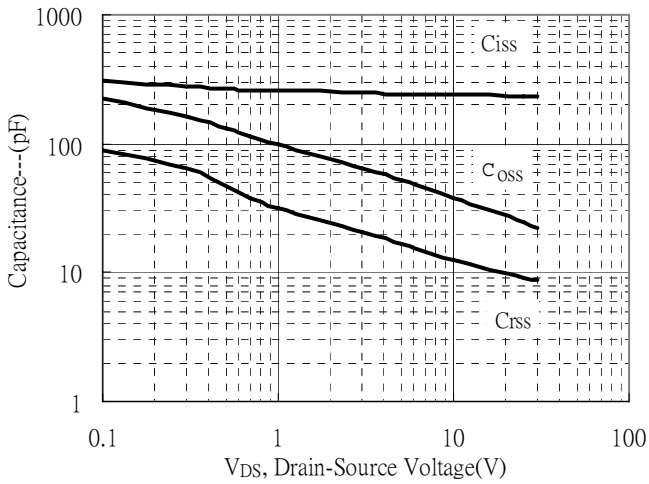
Gate Charge Characteristics



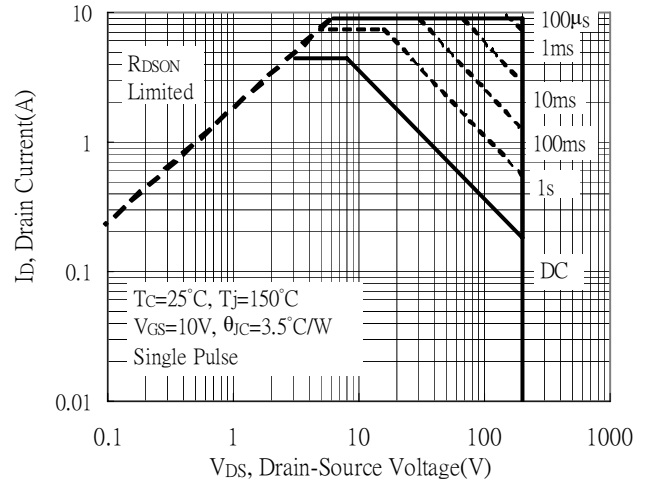
Drain-Source On-State Resistance vs Junction Temperature



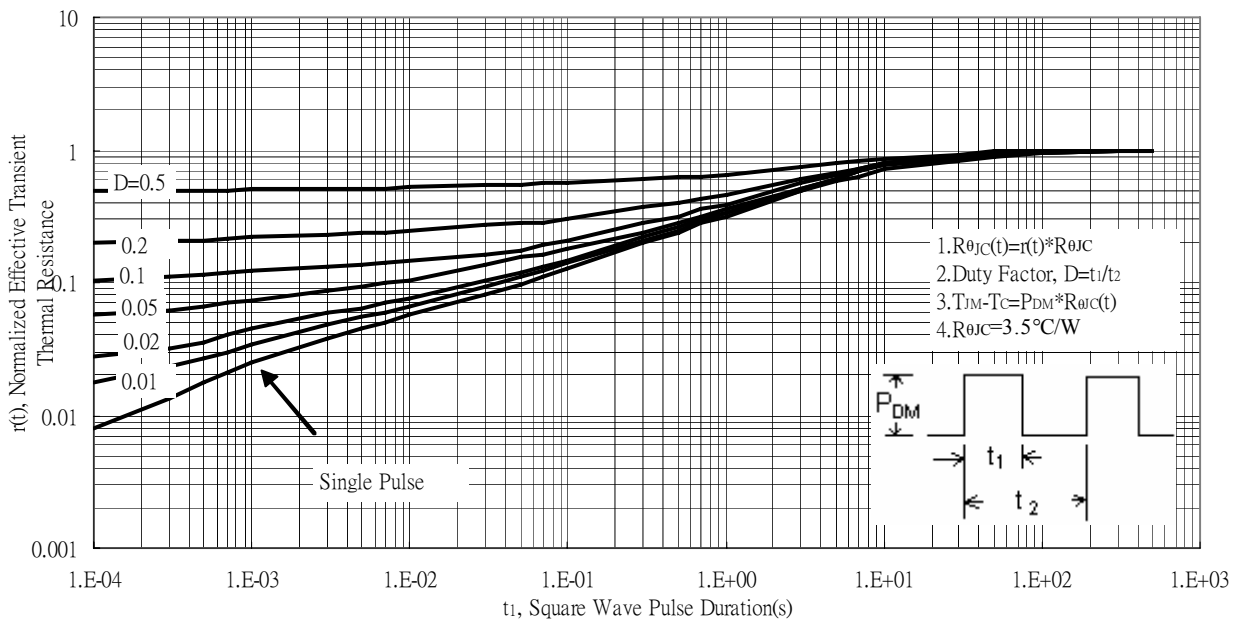
Capacitance vs Drain-to-Source Voltage



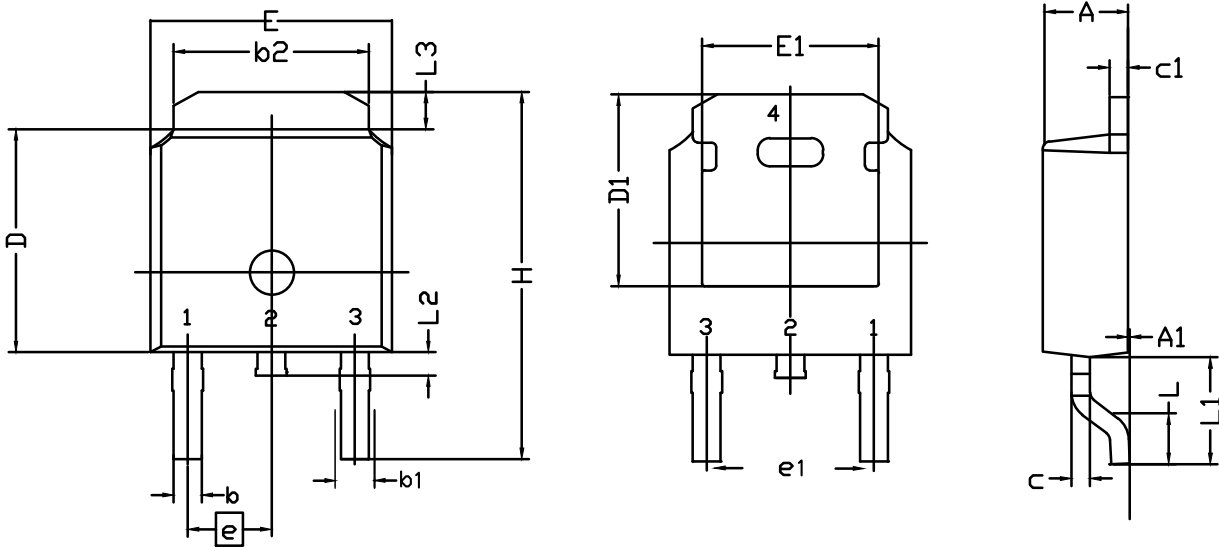
Maximum Safe Operating Area



Transient Thermal Response Curves



**TO-252 Package Outline Dimensions**



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	2.20	2.30	2.38	<b>E</b>	6.40	6.60	6.731
<b>A<sub>1</sub></b>	0.00	0.10	0.20	<b>E<sub>1</sub></b>	4.40	--	--
<b>b</b>	0.64	0.76	0.89	<b>e</b>	2.286 BSC		
<b>b<sub>1</sub></b>	0.77	0.85	1.14	<b>e<sub>1</sub></b>	4.572 BSC		
<b>b<sub>2</sub></b>	5.00	5.33	5.46	<b>H</b>	9.40	10.00	10.40
<b>c</b>	0.458	0.508	0.610	<b>L</b>	1.40	1.52	1.77
<b>C<sub>1</sub></b>	0.458	0.508	0.620	<b>L<sub>1</sub></b>	--	2.743	--
<b>D</b>	5.98	6.10	6.223	<b>L<sub>2</sub></b>	0.60	0.80	1.01
<b>D<sub>1</sub></b>	5.20	5.25	5.38	<b>L<sub>3</sub></b>	0.90	1.06	1.25