Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	90mΩ@10V	10A

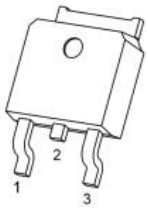
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

Application

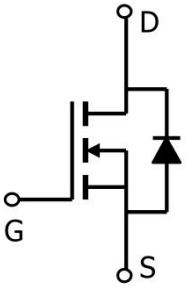
- Power switching application
- Load switching
- Uninterruptible power supply

Package

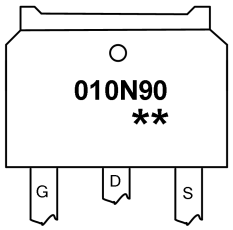


TO-252(G:1 D:2 S:3)

Circuit diagram



Marking



010N90 : Product code
** : Week code.

Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	10	A
Pulsed Drain Current	I_{DM}	40	A
Maximum Power Dissipation	P_D	34	W
Thermal Resistance,Junction-to-Case [2]	$R_{\theta JC}$	4.4	℃/W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃

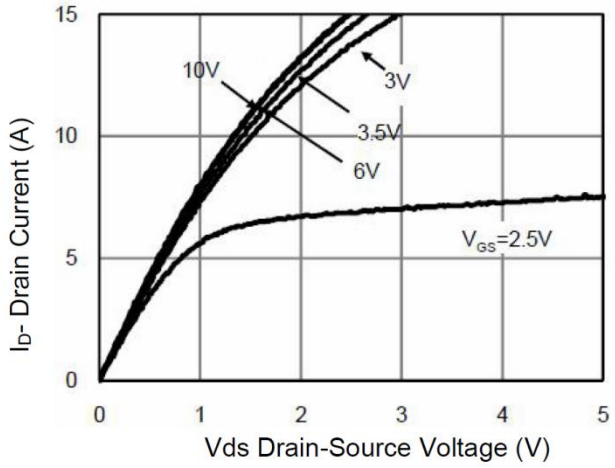
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V ID=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	VDS=100V,VGS=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	VGS=±20V,VDS=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS=VGS,ID=250μA	1.0	1.6	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	VGS=10V, ID=10A	-	90	110	mΩ
		VGS=4.5V, ID=8A	-	100	120	
Dynamic Characteristics [4]						
Input Capacitance	C_{lss}	VDS=50V,VGS=0V, F=1.0MHz	-	800	-	PF
Output Capacitance	C_{oss}		-	39	-	PF
Reverse Transfer Capacitance	C_{rss}		-	32	-	PF
Switching Characteristics [4]						
Turn-on Delay Time	$t_{d(on)}$	VDD=50V, RL=6.4Ω VGS=10V,RG=3Ω	-	5	-	nS
Turn-on Rise Time	t_r		-	40	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	nS
Turn-Off Fall Time	t_f		-	7	-	nS
Total Gate Charge	Q_g	VDS=50V,ID=10A, VGS=10V	-	16		nC
Gate-Source Charge	Q_{gs}		-	2.5	-	nC
Gate-Drain Charge	Q_{gd}		-	2.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage [3]	V_{SD}	VGS=0V,IS=15A	-	-	1.2	V
Diode Forward Current [2]	I_S		-	-	15	A
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =10A di/dt = 100A/μs(Note3)	-	21		nS
Reverse Recovery Charge	Q_{rr}		-	97		nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

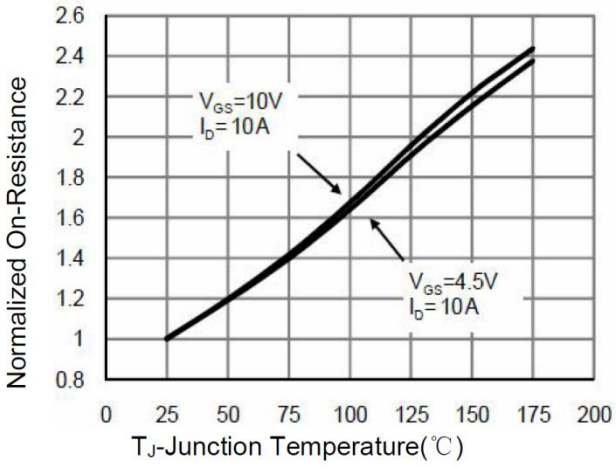
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤2%.
4. Guaranteed by design, not subject to production
5. EAS condition：Tj=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω

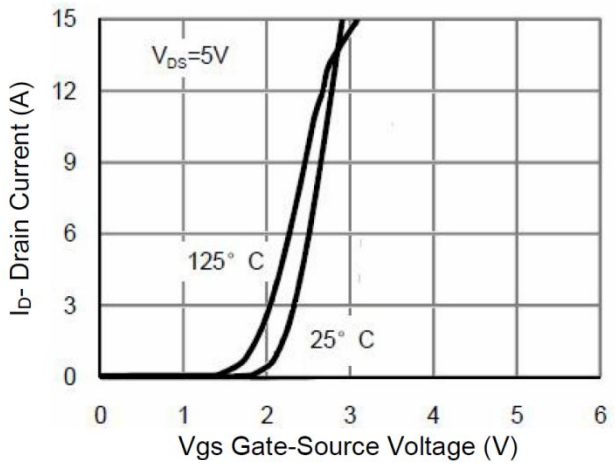
Typical Characteristics



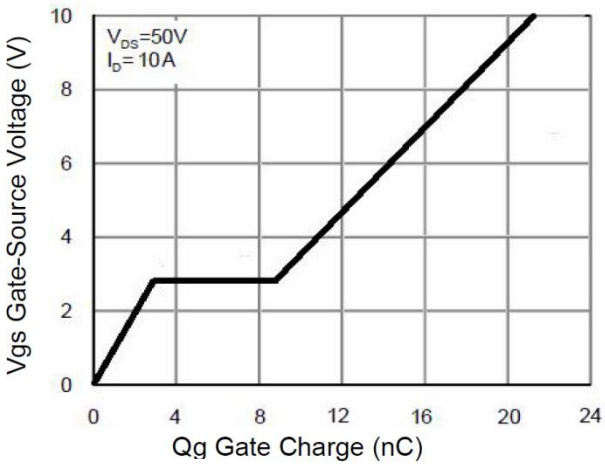
Output Characteristics



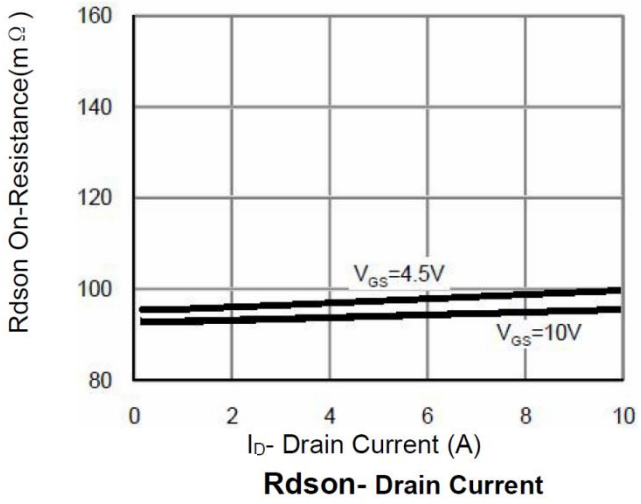
Rdson-JunctionTemperature



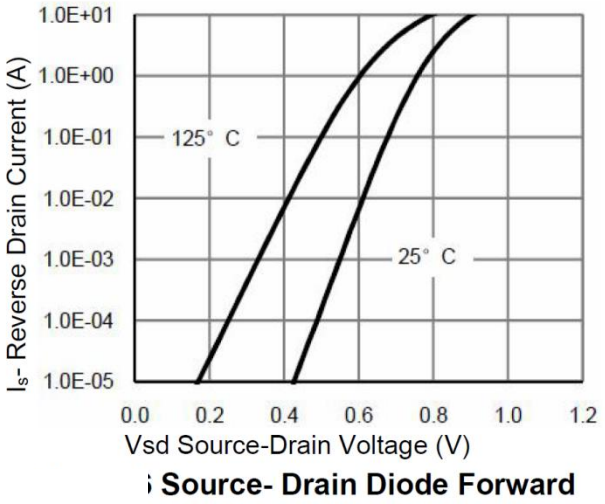
Transfer Characteristics



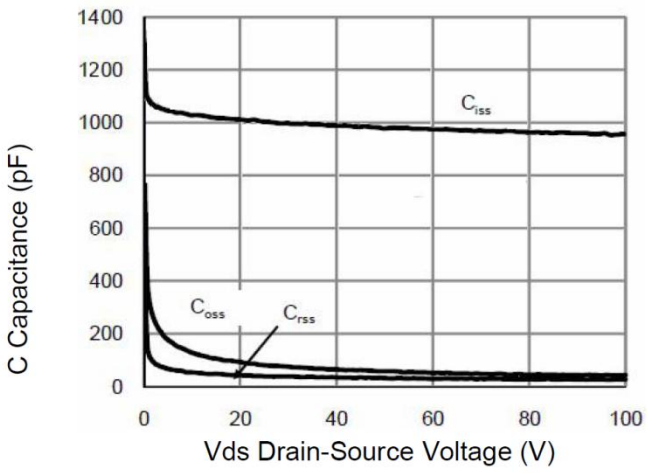
Gate Charge



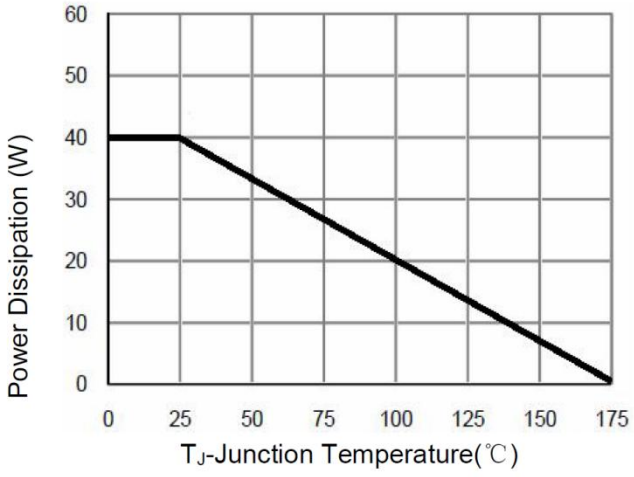
Rdson- Drain Current



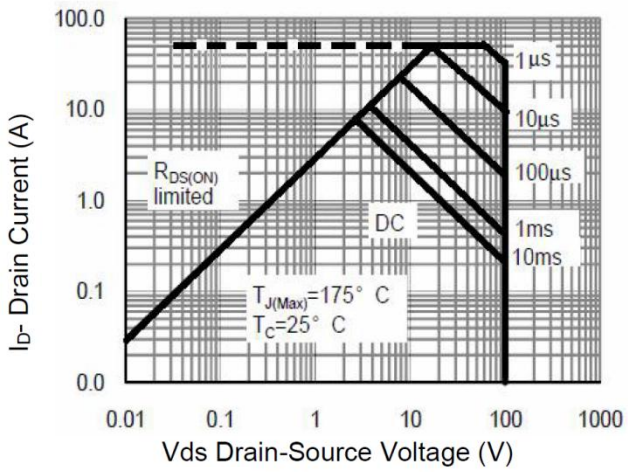
Source- Drain Diode Forward



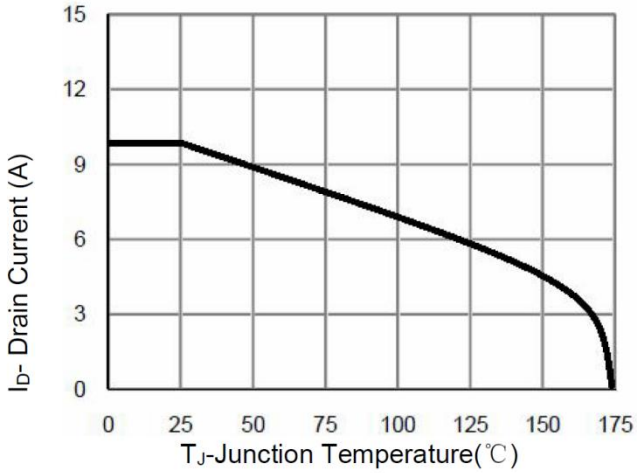
Capacitance vs Vds



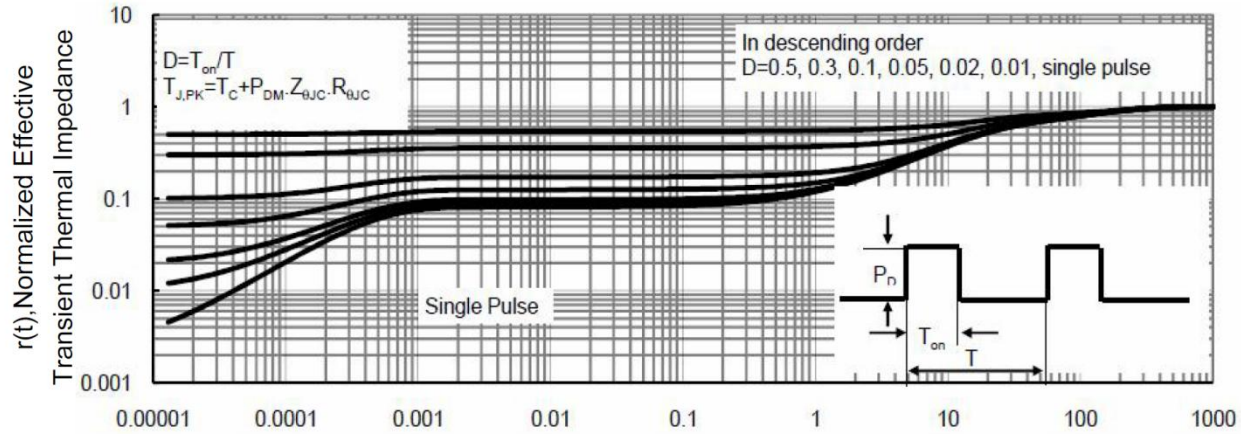
Power De-rating



Safe Operation Area

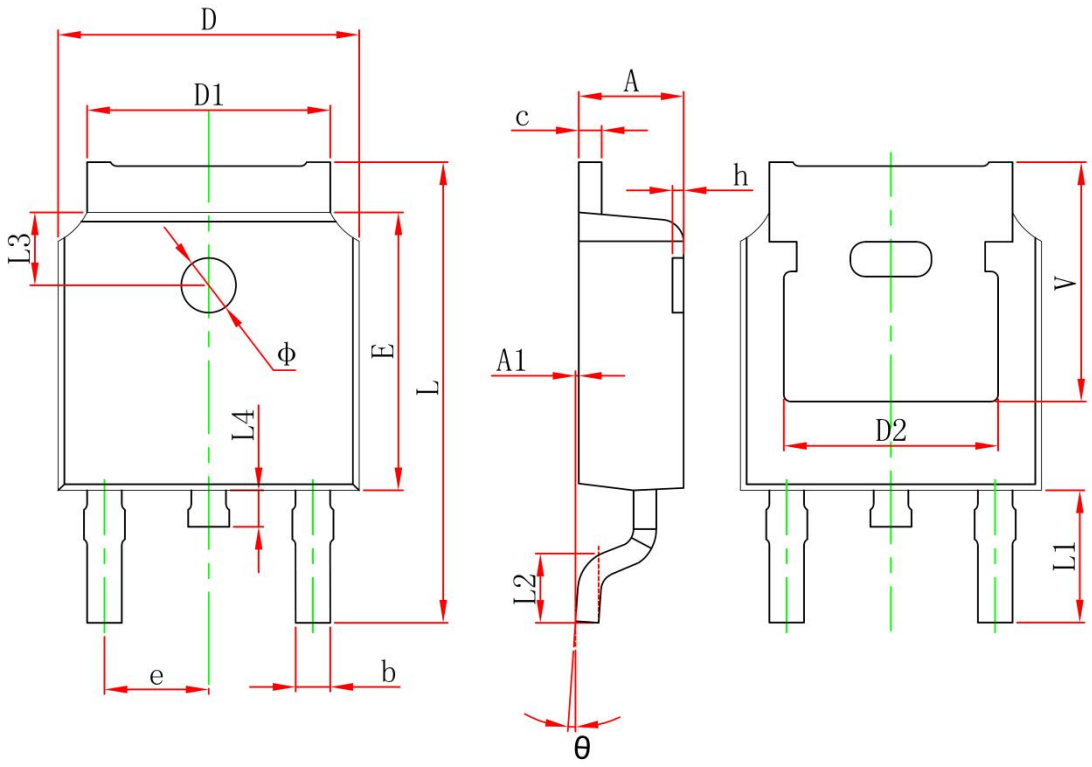


Current De-rating



Normalized Maximum Transient Thermal Impedance

TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	