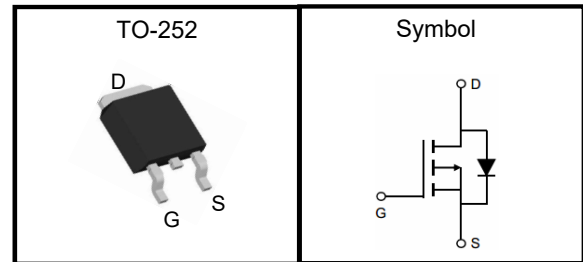


P-Channel Enhancement Mode MOSFET
Feature

- High density cell design for ultra low R_{ds(on)}
- Good stability and uniformity with high EAS
- ROHS Compliant & Halogen-Free

Applications

- High side switch for full bridge converter
- DC/DC Converters

Pin Description


V _{DSS}	-40	V
R _{DS(ON)-Max}	20	mΩ
I _D	-40	A

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-40	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous	I _D	-40	A
Drain Current-Continuous(T _C =100°C)	I _D	-28	A
Pulsed Drain Current	I _{DM}	-160	A
Maximum Power Dissipation	P _D	80	W
Derating factor		0.53	W/°C
Single pulse avalanche energy ^(Note 5)	E _{AS}	544	mJ
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 To 175	°C

Thermal Characteristic

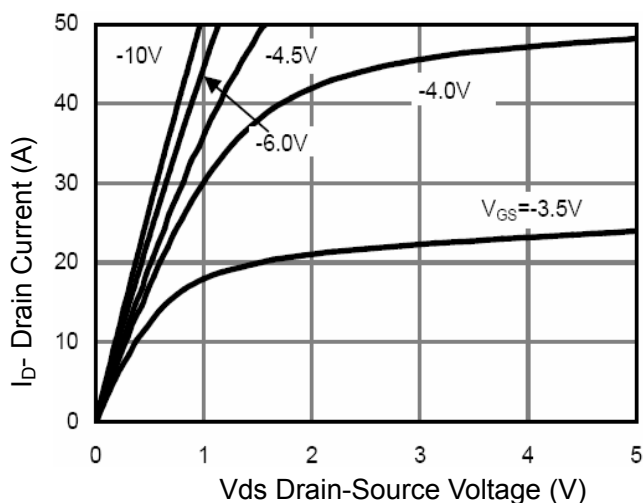
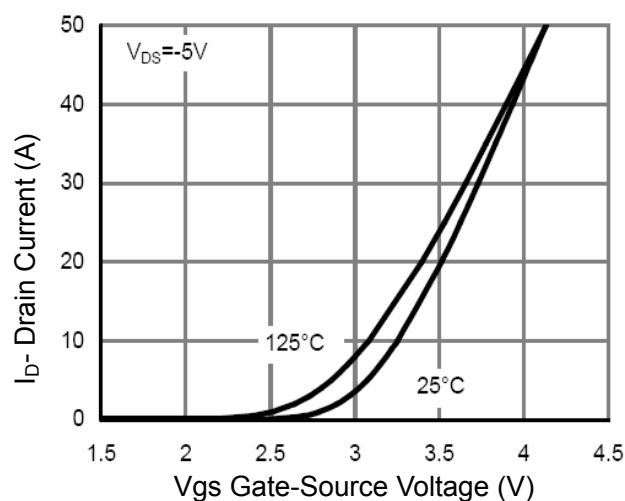
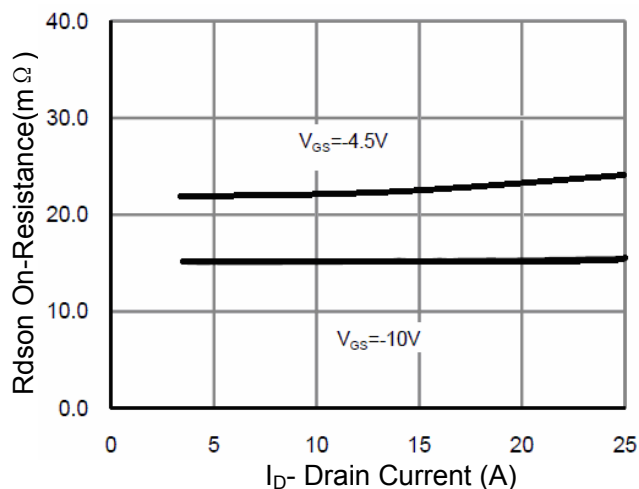
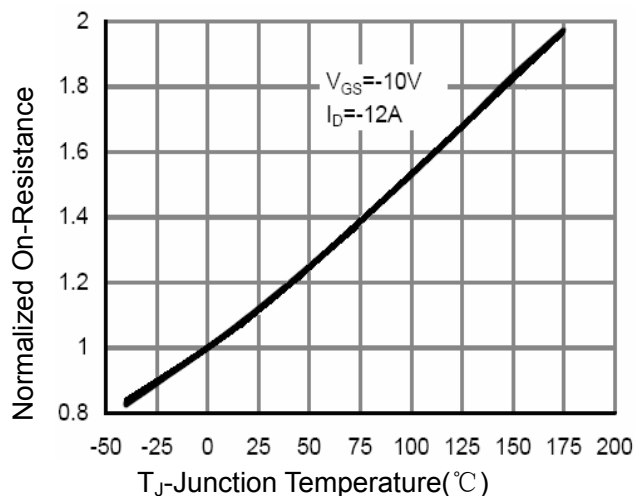
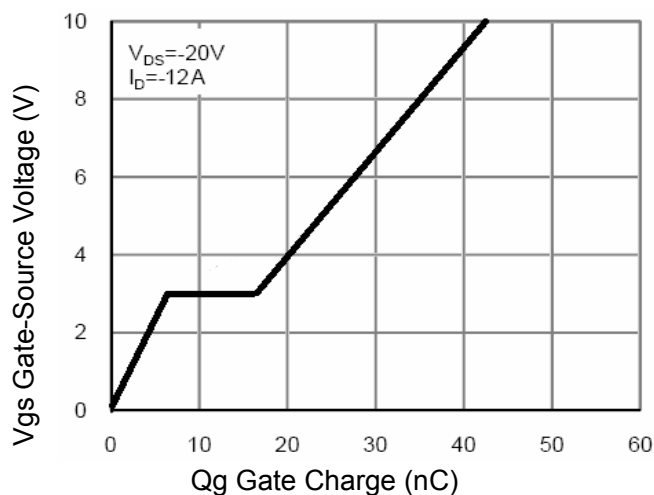
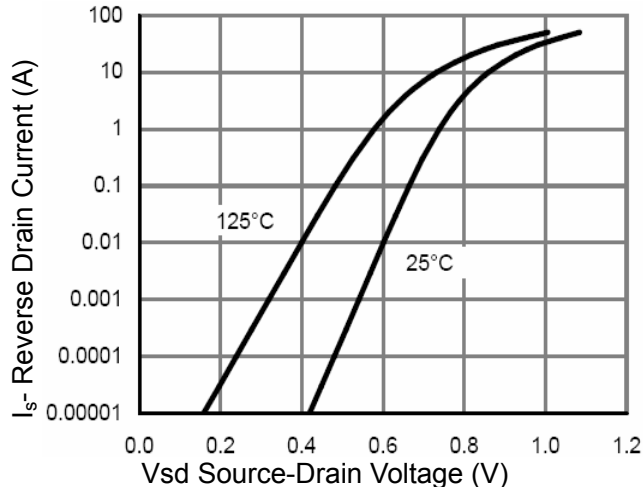
Thermal Resistance,Junction-to-Case ^(Note 2)	R _{θJC}	1.88	°C/W
Thermal Resistance,Junction-to-Ambient ^(Note 2)	R _{θJA}	50	°C/W

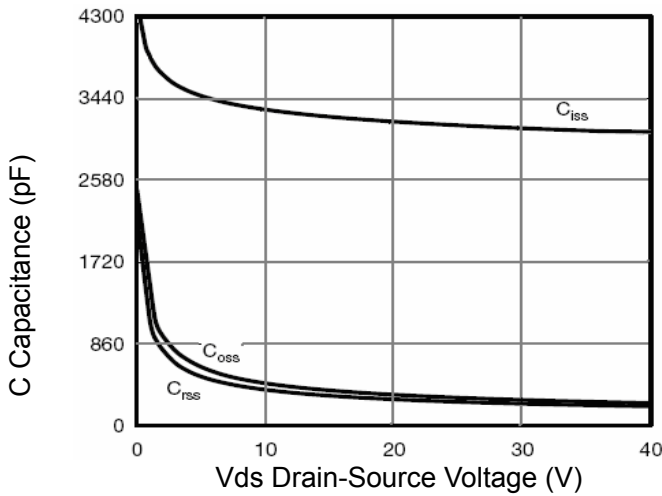
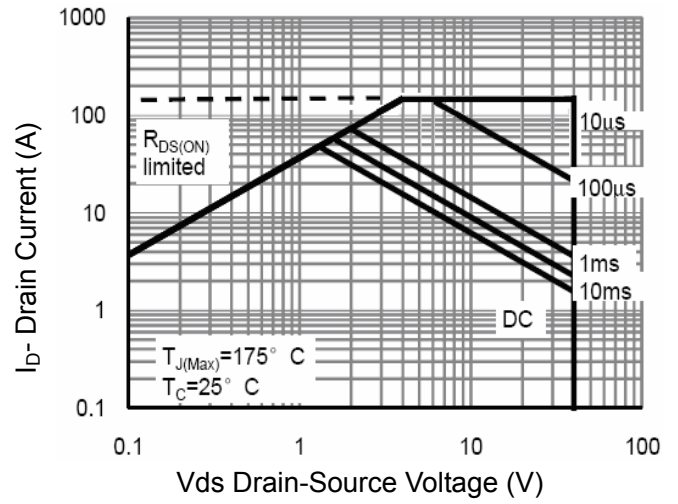
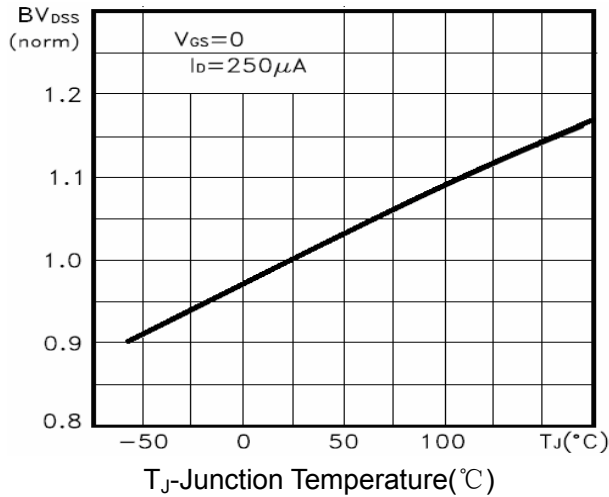
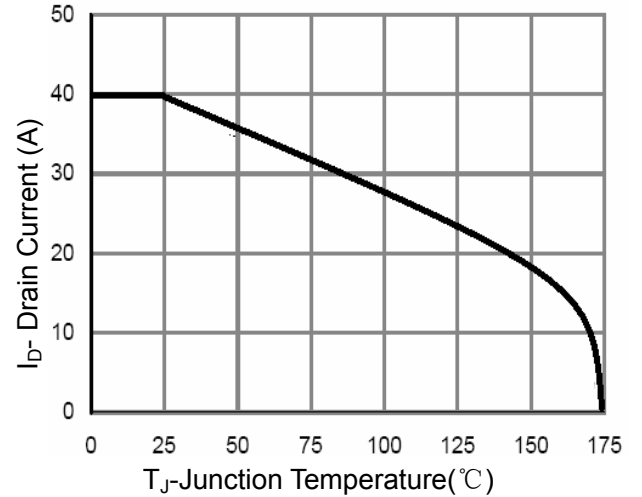
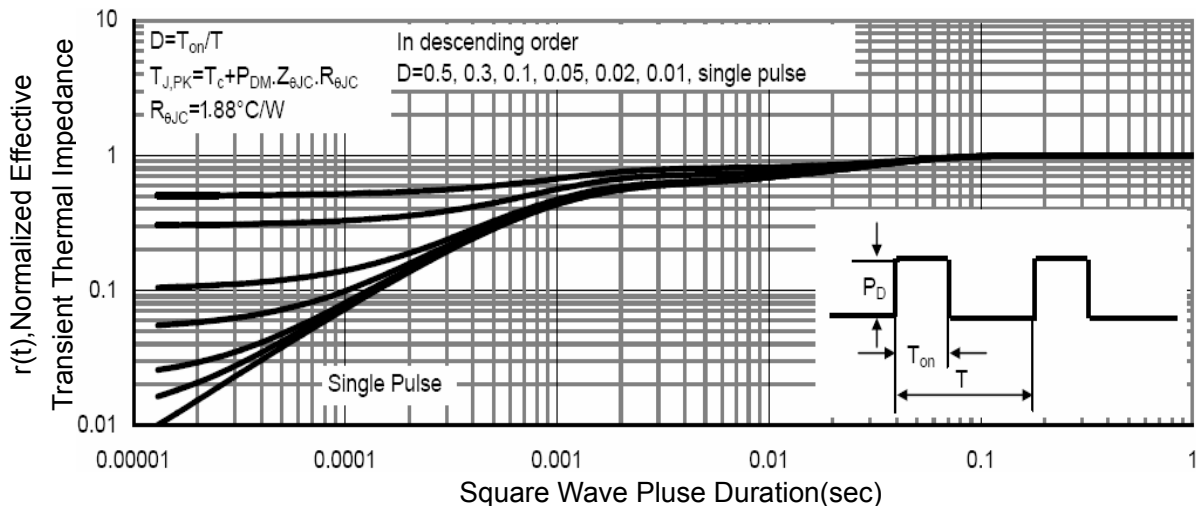

P-Channel Enhancement Mode MOSFET
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

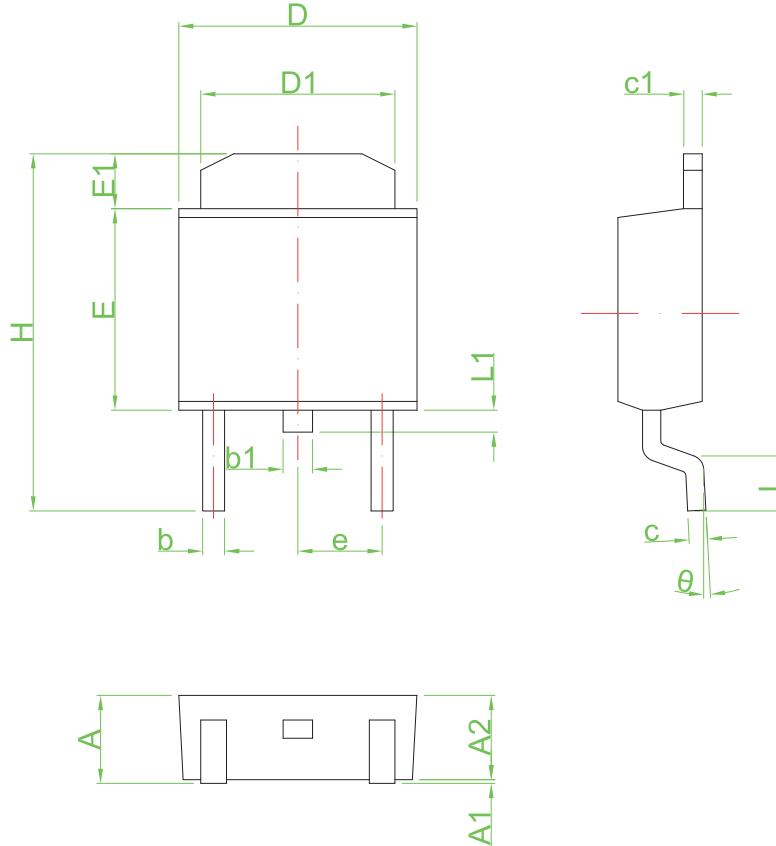
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.6	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-12A$	-	15	20	m Ω
		$V_{GS}=-4.5V, I_D=-12A$	-	22	30	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-12A$	-	34	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	2900	-	PF
Output Capacitance	C_{oss}		-	370	-	PF
Reverse Transfer Capacitance	C_{rss}		-	300	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-20V, I_D=-12A,$ $V_{GS}=-10V, R_G=2.5\Omega$	-	10	-	nS
Turn-on Rise Time	t_r		-	18	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	38	-	nS
Turn-Off Fall Time	t_f		-	24	-	nS
Total Gate Charge	Q_g	$V_{DS}=-20V, I_D=-12A,$ $V_{GS}=-10V$	-	42	-	nC
Gate-Source Charge	Q_{gs}		-	6.9	-	nC
Gate-Drain Charge	Q_{gd}		-	9.5	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=-12A$	-	-	-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-40	A
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}\text{C}, I_F = -12A$ $di/dt = -100A/\mu s$ (Note 3)	-	40	-	nS
Reverse Recovery Charge	Q_{rr}		-	42	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. E_{AS} condition: $T_J=25^{\circ}\text{C}, V_{DD}=-20V, V_G=-10V, L=1\text{mH}, R_G=25\Omega$

P-Channel Enhancement Mode MOSFET
Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1 Output Characteristics

Figure 2 Transfer Characteristics

Figure 3 Rdson- Drain Current

Figure 4 Rdson-Junction Temperature

Figure 5 Gate Charge

Figure 6 Source- Drain Diode Forward

P-Channel Enhancement Mode MOSFET

Figure 7 Capacitance vs Vds

Figure 8 Safe Operation Area

Figure 9 BV_{DSS} vs Junction Temperature

Figure 10 ID Current Derating vs Junction Temperature

Figure 11 Normalized Maximum Transient Thermal Impedance

P-Channel Enhancement Mode MOSFET
TO-252 Package Outline Dimensions


Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	2.25	2.65	0.089	0.104
A1	0.00	0.15	0.000	0.006
A2	2.20	2.40	0.087	0.094
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.46	0.66	0.018	0.026
c1	0.46	0.66	0.018	0.026
D	6.30	6.70	0.248	0.264
D1	5.20	5.40	0.205	0.213
E	5.30	5.70	0.209	0.224
E1	1.40	1.60	0.055	0.063
H	9.40	9.90	0.370	0.390
e	2.30 TYP		0.09 TYP	
L	1.40	1.77	0.055	0.070
L1	0.50	0.70	0.020	0.028
theta	0°	8°	0°	8°