

Complementary Enhancement MOSFET

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies. And suitable for use as a load switch or in PWM applications.

Features

N-channel

$V_{DS}(V)=30V$

$I_D=6.9A$

$R_{DS(ON)}<32m\Omega$ ($V_{GS}=10V$)

$R_{DS(ON)}<36m\Omega$ ($V_{GS}=4.5V$)

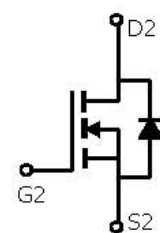
P-channel

$V_{DS}(V)=-30V$

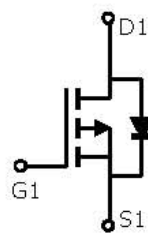
$I_D=-6A$

$R_{DS(ON)}<65m\Omega$ ($V_{GS}=-10V$)

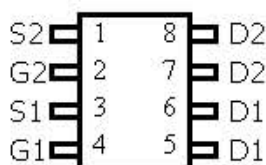
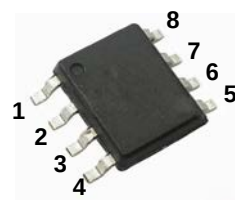
$R_{DS(ON)}<75m\Omega$ ($V_{GS}=-4.5V$)



n-channel



p-channel



SOP-8

Parameter	Symbol	Rating		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DSS}	± 30		V
Gate-Source Voltage	V_{GSS}	± 12		V
Continuous Drain Current ^A	I_D ($T_A=25^\circ C$)	6.9	-6.0	A
	I_D ($T_A=70^\circ C$)	5.8	-5.0	A
Pulsed Drain Current ^B	I_{DM}	± 30		A
Power Dissipation	P_D ($T_A=25^\circ C$)	2		W
	P_D ($T_A=70^\circ C$)	1.44		W
Maximum Junction-to-Ambient ^A	$R_{\theta JA}(t \leq 10s)$	62.5		$^\circ C/W$
	$R_{\theta JA}$	110		$^\circ C/W$
Maximum Junction-to-Lead ^C	$R_{\theta JL}$	60	4	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		$^\circ C$

Notes:

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The value in any a given application depends on the user's specific board design. The current rating is based on the $t \leq 10s$ thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C: The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

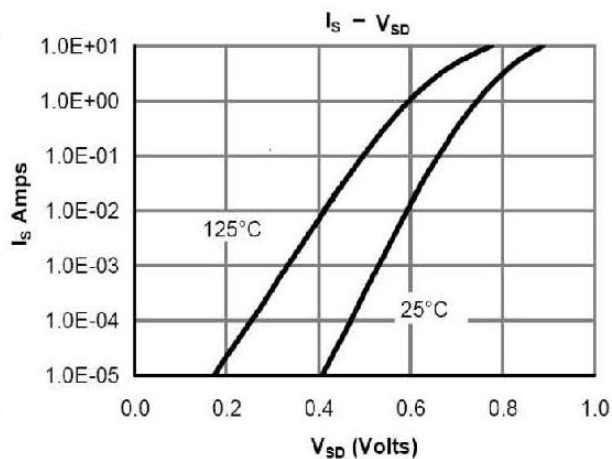
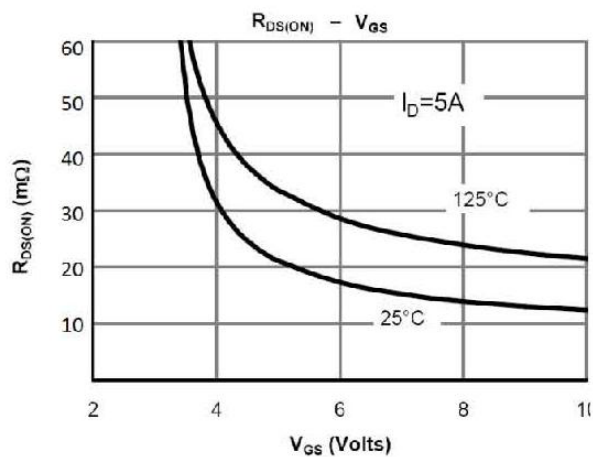
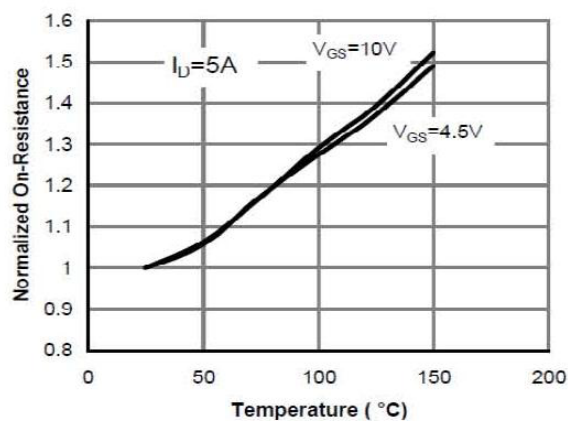
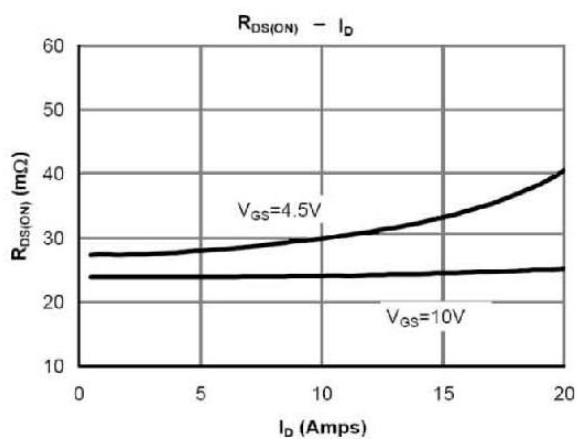
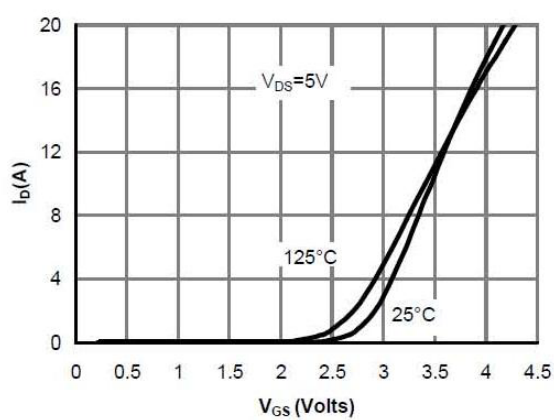
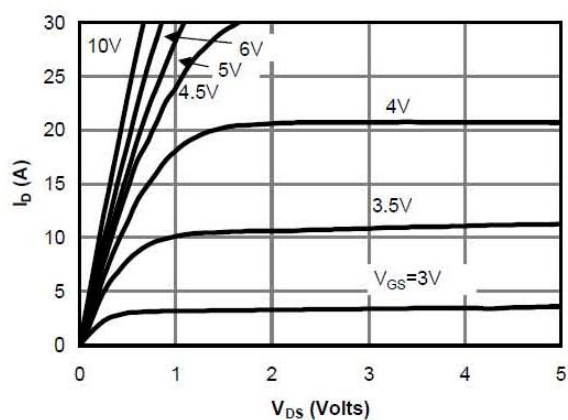
D: The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The SOA curve provides a single pulse rating.

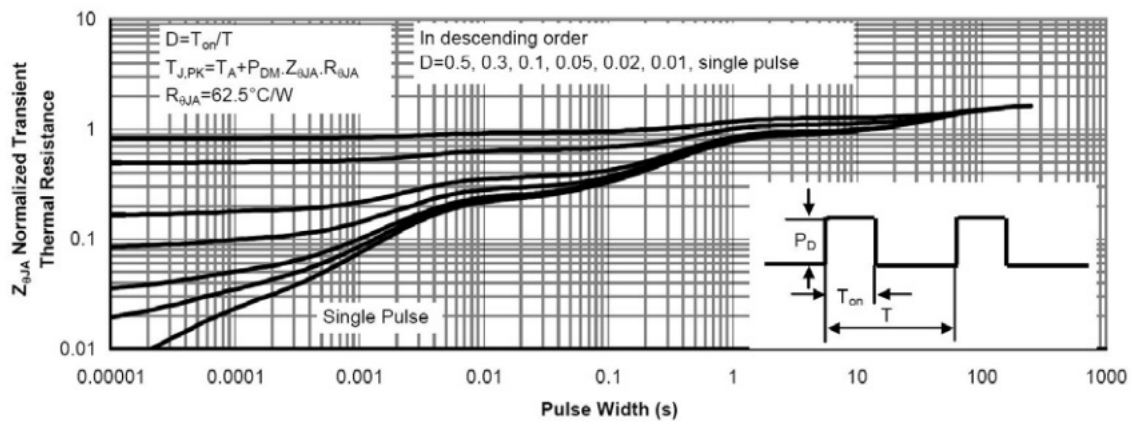
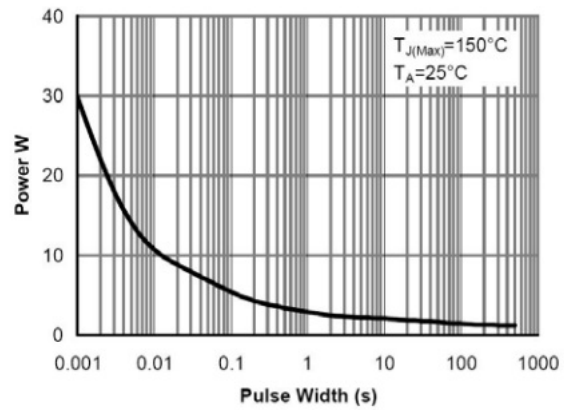
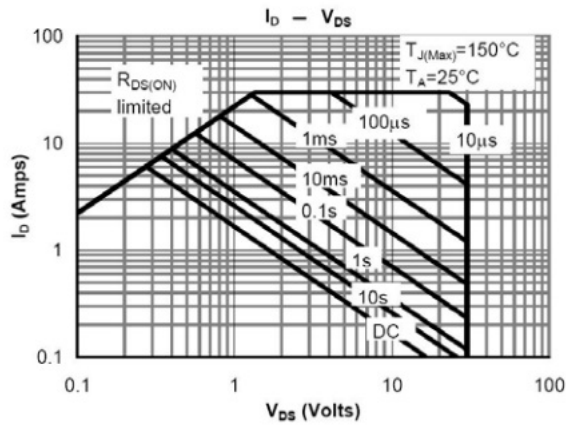
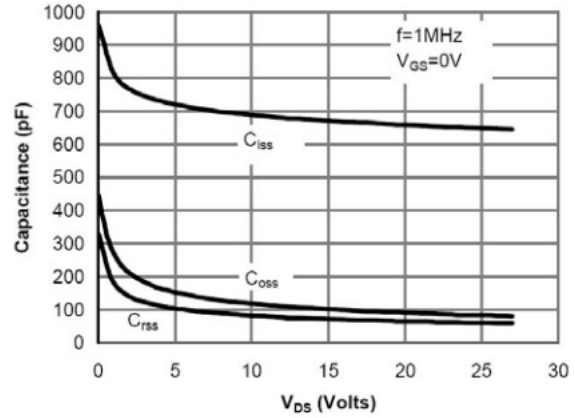
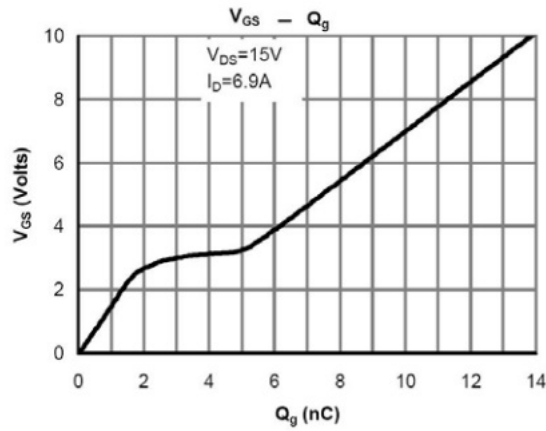
N-CHANNEL Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=24V$ $V_{GS}=0V$ $T_J=55^\circ C$			5.0	μA
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 12V$ $V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	0.65		1.3	V
On state drain current	$I_{D(on)}$	$V_{DS}=4.5V$ $V_{GS}=5.0V$	6.9			A
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=6.9A$		24	32	m Ω
		$V_{GS}=10V$ $T_J=125^\circ C$ $I_D=6.9A$		32.3	38	m Ω
		$V_{GS}=4.5V$ $I_D=5.0A$		27	36	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5.0V$ $I_D=5.0A$		9		S
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1.0A$		0.76	1.0	V
Input Capacitance	C_{iss}	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$		680		pF
Output Capacitance	C_{oss}			102		pF
Reverse Transfer Capacitance	C_{rss}			77		pF
Gate resistance	R_g	$V_{DS}=0V$ $f=1.0MHz$ $V_{GS}=0V$		3.0		Ω
Total Gate Charge(10V)	Q_g	$V_{GS}=10V$ $V_{DS}=15V$ $I_D=6.9A$		13.84		nC
Total Gate Charge(4.5V)				6.74		nC
Gate-Source Charge	Q_{gs}			1.82		nC
Gate-Drain Charge	Q_{gd}			3.2		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=2.1\Omega$ $R_{GEN}=3\Omega$		4.6		ns
Turn-On Rise Time	t_r			4.1		ns
Turn-Off Delay Time	$t_{d(off)}$			20.6		ns
Turn-Off Fall Time	t_f			5.2		ns
Body Diode Reverse Recovery Time	t_{rr}	$I_F=6.9A$ $dI/dt=100A/\mu s$		16.5		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=6.9A$ $dI/dt=100A/\mu s$		7.8		nC

N-CHANNEL Electrical Characteristic Curve



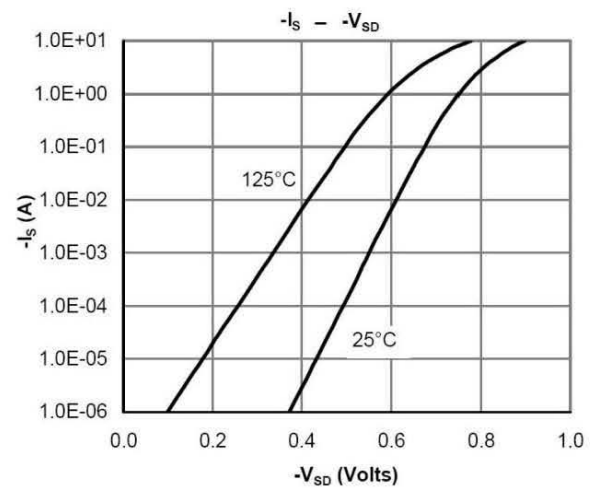
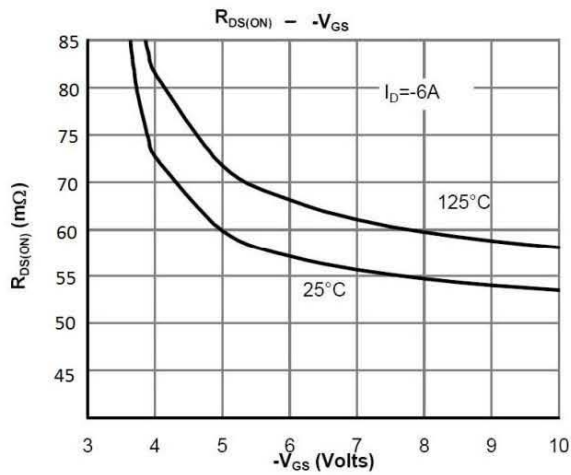
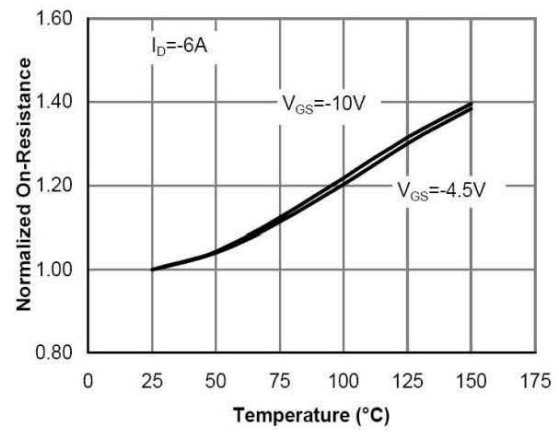
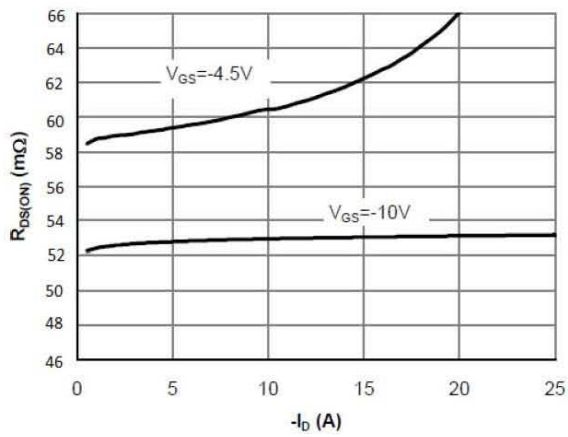
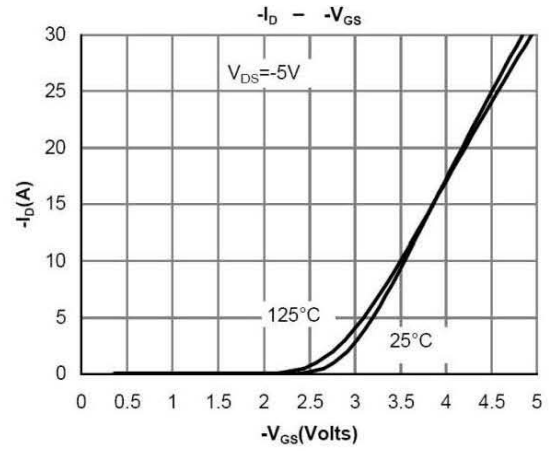
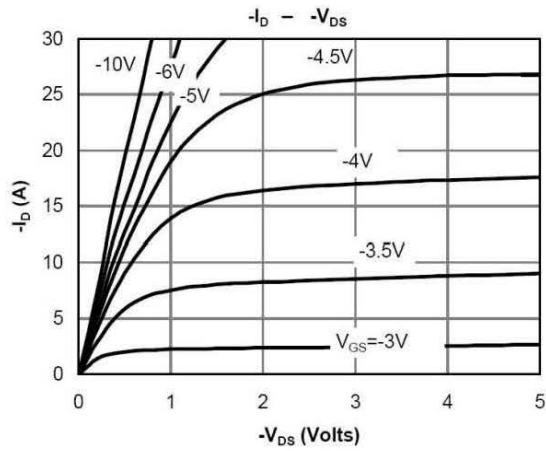
N-CHANNEL Electrical Characteristic Curve



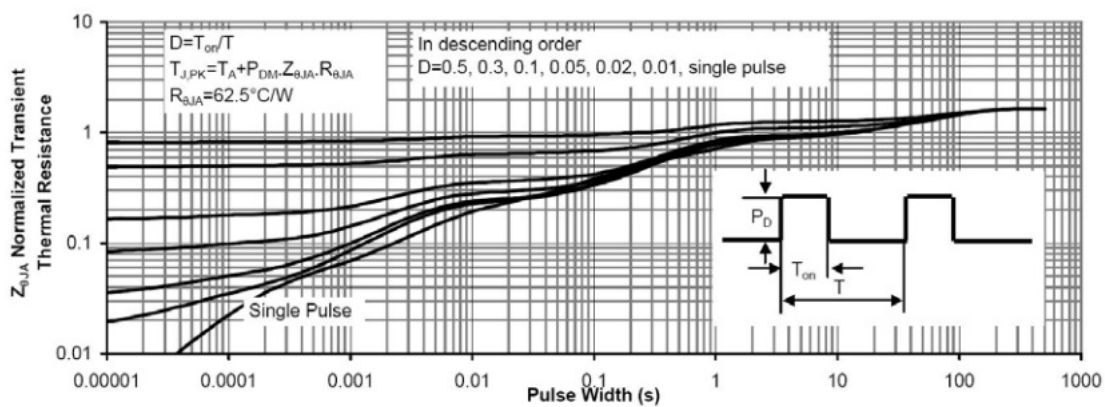
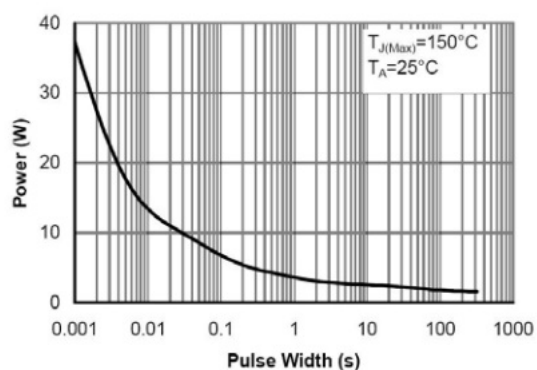
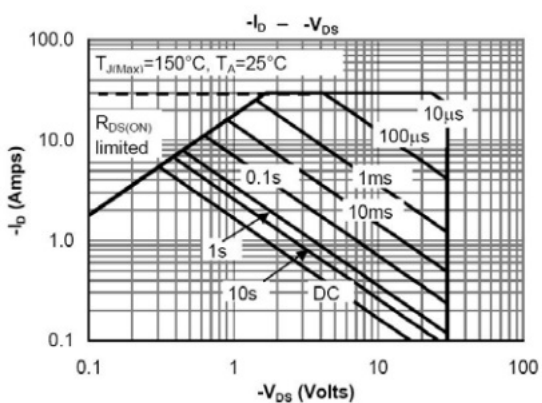
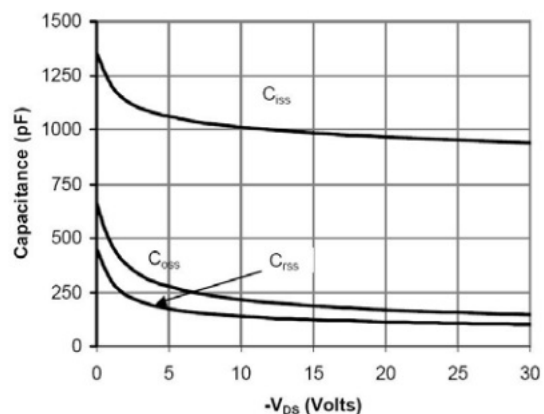
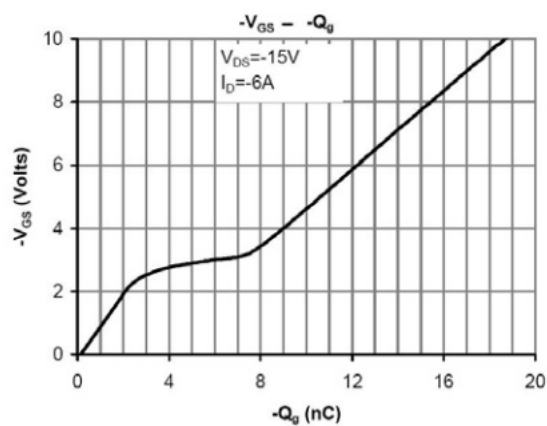
P-CHANNEL Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-24V$ $V_{GS}=0V$			-1.0	μA
		$V_{DS}=-24V$ $V_{GS}=0V$ $T_J=55^\circ C$			-5.0	μA
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 12V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu A$	-0.5	-0.7	-1.3	V
On state drain current	$I_{D(on)}$	$V_{DS}=-4.5V$ $V_{GS}=-5.0V$	6			A
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V$ $I_D=-6.0A$		52	65	m Ω
		$V_{GS}=-10V$ $I_D=-6.0A$ $T_J=125^\circ C$		57	86	m Ω
		$V_{GS}=-4.5V$ $I_D=-5.0A$		59	75	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5.0V$ $I_D=-5.0A$		12		S
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=-1.0A$		-0.76	-1.0	V
Input Capacitance	C_{iss}	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1.0MHz$		920		pF
Output Capacitance	C_{oss}			190		pF
Reverse Transfer Capacitance	C_{rss}			122		pF
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		3.6		Ω
Total Gate Charge(10V)	Q_g	$V_{GS}=-10V$ $V_{DS}=-15V$ $I_D=-6.0A$		18.5		nC
Total Gate Charge(4.5V)				9.6		nC
Gate-Source Charge	Q_{gs}			2.7		nC
Gate-Drain Charge	Q_{gd}			4.5		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V$ $V_{GS}=-10V$ $R_L=2.7\Omega$ $R_{GEN}=3\Omega$		7.7		ns
Turn-On Rise Time	t_r			5.7		ns
Turn-Off Delay Time	$t_{d(off)}$			20.2		ns
Turn-Off Fall Time	t_f			9.5		ns
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-6.0A$ $dI/dt=100A/\mu s$		20		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=-6.0A$ $dI/dt=100A/\mu s$		8.8		nC

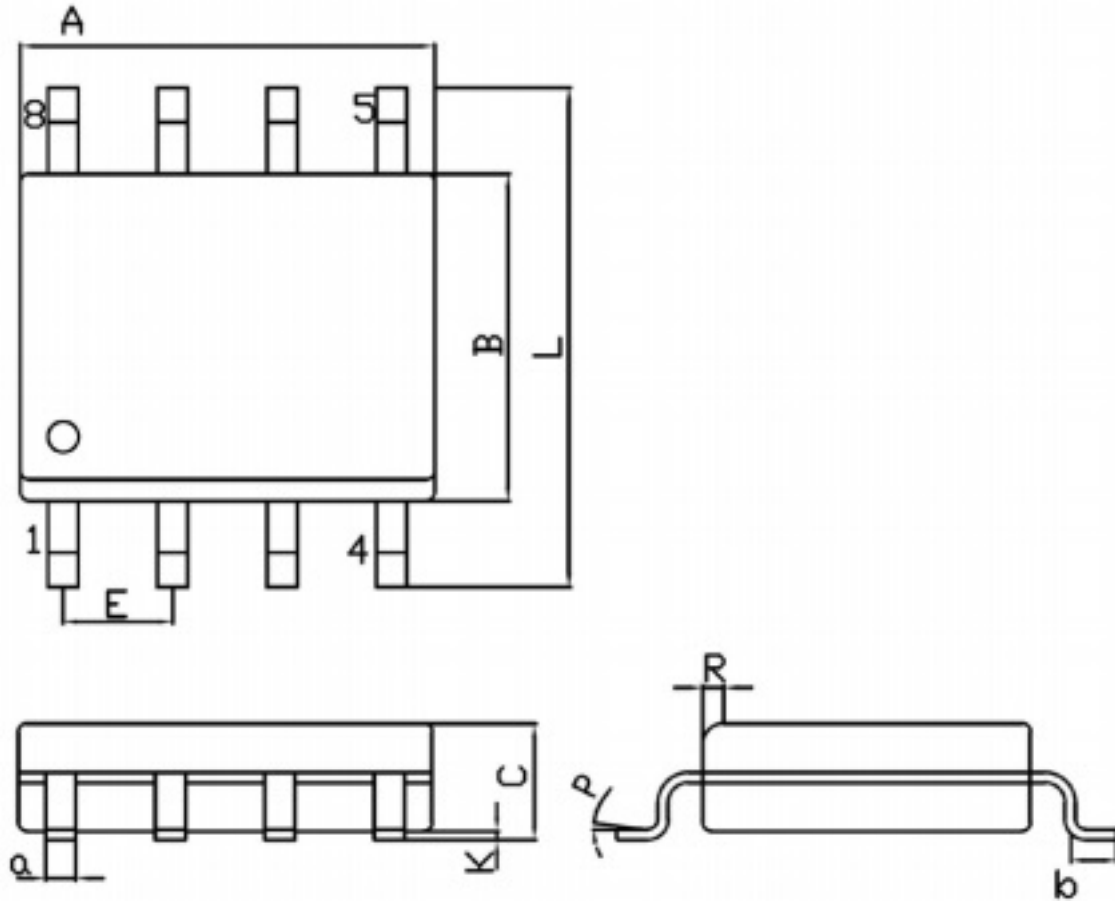
P-CHANNEL Electrical Characteristic Curve



P-CHANNEL Electrical Characteristic Curve

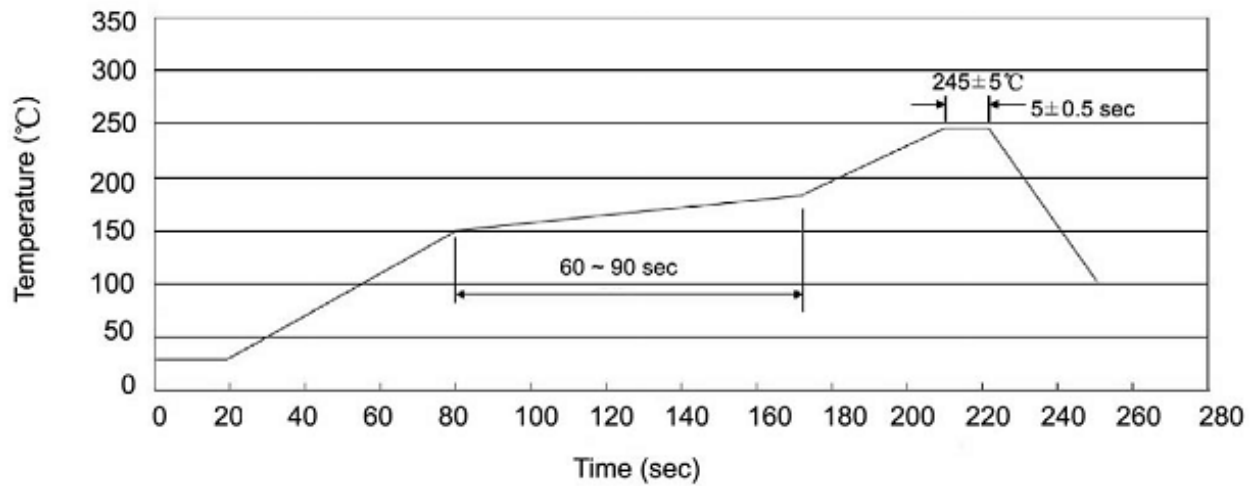


Package Dimensions



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	a	0.35	0.49
L	5.80	6.20	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25

Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

1. Preheating: 150~180°C, Time: 60~90sec.
2. Peak Temp.: 245±5°C, Duration: 5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

Resistance to Soldering Heat Test Conditions

Temp.: 260±5°C Time: 10±1 sec